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THE UNIVERSITY OF ALBERTA

EATING AND EXERCISE ATTITUDES IN UNIVERSITY STUDENTS

by

Doris Lorraine Milke

(C)

A THESIS

SUBMITTED TO THE FACULTY OF GRADUATE STUDIES AND RESEARCH

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Supervisor

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EATING AND EXERCISE ATTITUDES
IN UNIVERSITY STUDENTS

ABSTRACT

The Eating Attitudes Test-26, which has been used as a screening device for anorexic behaviors, was embedded within questions on obligatory exercise and "carbohydrate craving". The purpose was first, to assess the relationship between obsessional exercise and anorexic behaviors and second, to determine whether the bulimic symptoms found in university populations are analogous to "carbohydrate craving". The test population is described in terms of such characteristics as weight for height, perceived ideal weight, activity level, and the prevalance of dieting, binge-eating, and vomiting for weight control. Unexpectedly, 48% of the females who evidenced no signs of an eating disorder have been 15-25% below their normal weights. Of 613 students, 105 of the 399 females were above the recommended EAT-26 cut-off score of 20 while only 8 of the 214 males scored above 20. A factor analysis of the research scale is presented. As a second phase of the study, the scores on the research scale and the EAT-26 are evaluated by interviewing a number of subjects from the group tests. Interviews were conducted with 30 males and females who obtained low scores on the variables of

interest, 30 males and females who obtained high scores on questions relating to obsessive exercise, and 30 males and females who obtained high scores on "carbohydrate-craving" questions. As well, 30 females whose scores suggested they had the behaviors and attitudes characteristic of the disturbed eating seen in 1) anorexia nervosa (self-starvation) or 2) bulimia (binge-eating) were interviewed. Interview data and the results of EEQ factor analysis lead to the conclusion that the EAT-26 was measuring anorexic- and bulimic-like behaviors and attitudes in this study, although imperfectly. The summary conclusion is drawn that the hypothesized association between anorexic-like behaviors and attitudes and those of obligatory or obsessional attitudes toward exercise, is supported. This association is evident only in females. The nature of the relationship merits further study. The association found in females between carbohydrate-craving and dieting and in anorexic- and bulimic-like behaviors suggests that further exploration of the relationship is warranted.

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INTRODUCTION

A variety of psychometric measures have been used with varying success in non-clinical populations to identify clusters of behavioral and attitudinal characteristics that may be indicative of disturbed eating (Button & Whitehouse, 1981; Clarke & Palmer, 1983; Cooper & Fairburn, 1983; Cooper, Waterman, & Fairburn, 1984; Garfinkel & Garner, 1982; Garner & Garfinkel, 1979, 1980; Garner, Olmsted, & Garfinkel, 1983; Halmi, Falk, & Schwartz, 1981; Hawkins & Clement, 1980; Kelley, Patten, & Johannes, 1982; Thompson & Schwartz, 1982). But the search for such characteristics has not examined an hypothesized relationship of exercise to anorexia nervosa (Chipman, Hagan, Edlin, Soll, & Carruth, 1983; Epling, Pierce, & Stefan, 1981, 1983; Fears, Glass, & Vigersky, 1983; Smith, 1980; Yates, Leehey, & Shisslak, 1983). Nor has there been any attempt to assess any relationship between bulimia and what has been described as carbohydrate craving (Hopkinson, 1981; Smith & Sauder, 1969; J. J. Wurtman, 1983). Before examining the rationale of the present study the literature regarding the relationship of anorexia nervosa to bulimia, obsessional exercise, and carbohydrate craving will be reviewed.

Literature Review

Anorexia nervosa qualifies as a medical syndrome and diagnosis is made on a combination of physiological and

psychological criteria, empirically derived, rather than derived rationally from a known cause (Anderson, 1977). The condition is characterized by its primary diagnostic criterion, a distorted attitude toward eating, food or weight, that overrides hunger. Food is voluntarily refused. There is a fear of becoming obese which does not diminish through weight loss, with a disturbance of body image, that is "feeling fat" even when emaciated. Individuals refuse to maintain body weight over a minimum of normal weight which is often as low as 85% of normal. A weight loss of from 15-25% of body weight (depending on the researcher) in the absence of a known medical or affective disorder which would account for the loss, has been considered a criterion. The *DSM III* criterion is either 25% actual loss or, for individuals under 18, being 25% below the projected weight expected from growth charts. The weight criterion is currently controversial because of clinical diagnoses being made not only with considerably smaller weight losses but also because of reports of anorexia nervosa at normal body weights (Crisp, 1981-82; Kirstein, 1981-82). Typically, the condition begins before the patient is 25 years old, but age is no longer a diagnostic criterion. As well as the above features, the following manifestations may be seen: amenorrhea, lanugo, bradycardia, periods of overactivity, episodes of bulimia (gorging), or self-induced vomiting (Feighner et al.,

1972). These are no longer used as diagnostic criteria. All but the latter are considered by many researchers to be correlates of starvation rather than distinctive features of anorexia nervosa (Crisp 1970b, 1978, 1979, 1981-82; Drossman, Ontjes, & Heizer, 1979; Garfinkel & Garner, 1982; Isaacs, 1979; Keys, Brozek, Henschel, Mickelsen, & Taylor, 1950). Although several theories exist, the mechanism or causative factor of the disorder is unknown.

Incidence of Anorexia Nervosa

There is evidence that the incidence of anorexia nervosa is increasing. Although anorexia nervosa was considered a rare disorder during the last century, Crisp and his associates have found in girls over age 16, 1 severe case per 200 in public schools and 1 severe case per 100 in private schools in London (Crisp, Palmer, & Kalucy, 1976). Theander (1970) observed a significant increase in Sweden in the final years of a 30 year retrospective study. Jones and her associates, in searching New York's Monroe County medical records, found 6 times as many cases between 1970 and 1976 as between 1960 and 1969 (Jones, Fox, Babigian, & Hutton, 1980). Duddle (1973) found anorexia nervosa cases appearing at a university clinic increased from 0 in 100 psychiatric cases in 1966 and 1967 to 7 in 99 in 1970 and 13 in 118 in 1971. Interestingly, researchers have found the frequency of male cases of anorexia nervosa has not increased in the way

female cases have (Bruch, 1978; Garfinkel & Garner, 1982; Jones et al., 1980). Anorexia nervosa has been rarely reported in males and the ratio of male cases to female cases would appear to range from 1:10 to 1:20 (Beumont, Beardwood, & Russell, 1972; Crisp & Toms, 1972; Falstein, Feinstein, & Judas, 1956; Hasan & Tibbetts, 1977; Hay & Leonard, 1979; Hogan, Huerta, & Lucas, 1974; Sreenivasan, 1978; Swann, 1977).

Subtypes of Anorexia Nervosa

Accompanying the increasing incidence there have been reports suggesting anorexia nervosa is not a unitary disorder. For example, bulimic and restrictive subtypes have been distinguished by both behavioral and physiological criteria (Beumont, 1977; Calloway, Fonagy, & Wakeling, 1983; Casper, Eckert, Halmi, Goldberg, & Davis, 1980; Crisp 1981-82; Fries, 1977; Garfinkel, 1981; Garfinkel, Moldofsky, & Garner, 1980; Halmi, Goldberg, Casper, Eckert, & Davis, 1979; Pyle, Mitchell, & Eckert, 1981; Reichelt et al., 1978; Russell, 1979). In the 1970s a number of researchers began to describe individuals with bulimic episodes as a distinct subgroup within the population of anorexia nervosa patients (e.g. Casper et al., 1980; Russell, 1979). The *bulimic* anorexics alternate restrictive diets or fasts with episodes during which they consume huge quantities of food. The *restrictive* anorexics do not deviate from their

restrictive dieting. Bulimic anorexics generally do not sustain the extreme weight losses of the restrictive anorexics, indeed some are within the normal weight range (Crisp, 1981-82; Kirstein, 1981-82). It is this finding that has made the weight criterion in the diagnosis of anorexia nervosa problematic.

Several investigators have found that 30-50% of anorexics had symptoms of bulimia (Beumont, 1977; Casper et al., 1980; Crisp, Hsu, & Harding, 1980; Hsu, Crisp, & Harding, 1979; Pyle et al., 1981 Russell, 1979). Garfinkel (1981), in reviewing 155 anorexia nervosa patients, describes statistically significant differences between bulimics and restricters. The bulimic group are more likely to have been premorbidly obese (defined as ≥115% of average) and have obese mothers. Bulimics are more likely to induce vomiting and misuse laxatives for weight control. They are more extroverted, less isolated, and more sexually active than restricters. Most strikingly, Garfinkel found, and others have agreed (Crisp et al., 1980; Lie, 1981), the bulimic group displays a variety of impulse related behaviors: stealing, shop-lifting, use of street drugs and overuse of alcohol. As well, suicide attempts and self-mutilation were more common in Garfinkel's bulimics. It has been generally agreed that bulimic anorexia has a poorer prognosis than restrictive bulimia (Casper et al., 1980; Russell, 1979; Strober, 1981).

Incidence of Bulimia, A New Disorder

Bulimic episodes have not only been described as one of the symptoms of anorexia nervosa, the behavior of gorging or bingeing also has been described in the literature on obesity (Green & Rau, 1977; Schacter & Rodin, 1974; Ullman, 1951). As well, reports have appeared of bulimia that is not related to either anorexia nervosa or obesity (Hawkins & Clement, 1980; Pyle et al., 1981). Perhaps because of bulimic episodes at a wide range of body weights, bulimia appears as an eating disorder in its own right in *DSM III*. The diagnostic criteria include recurrent episodes of binge-eating (rapid consumption of large amounts within a 1-2 hours), fear of not being able to stop eating voluntarily, a depressed mood following binges, and at least three of: (1) inconspicuous eating during a binge, (2) bingeing on high calorie and easily ingested food, (3) termination of such eating by pain, sleep, social interruption, or self-induced vomiting, (4) repeated attempts to lose weight by severely restrictive diets, self-induced vomiting, cathartics and or diuretics, and (5) frequent weight fluctuations greater of than 10 pounds due to binges and fasts. The bulimic episodes must not be due to anorexia nervosa or any known physical disorder to meet *DSM III* criteria. No weight criterion is mentioned. It would appear that weight loss and the starvation symptoms included in the diagnostic criteria for

anorexia nervosa are the chief features by which to distinguish between bulimia and bulimic anorexia.

A number of research studies have claimed to find high rates of bulimia in college populations among persons of normal weight (Boskind-Lodahl & White, 1978; Halmi et al., 1981; Hawkins & Clement, 1980, in press; Mitchell & Pyle, 1982; Wardle, 1980). Hawkins and Clement found some 27% of normal weight subjects and 33% of an overweight sample had bulimic behaviors by their own report. Except for a small group of clinically obese, their subjects were drawn from psychology classes. Halmi et al., (1981) found all of the major *DSM III* symptoms of bulimia appeared in 13% of their college sample (87% of these were female, thus 19% of the female population reported all the major symptoms of bulimia outlined in *DSM III*). Their survey was conducted by mail and 66% of the population returned questionnaires. Clinical reports have appeared in college populations as well. Stangler and Printz (1980) found in 500 consecutive patients at a university psychiatric clinic that 4.4% had eating disorders, consistent with *DSM III* criteria. Three patients had anorexia nervosa and 19 had bulimia.

Cooper & Fairburn (1983; Cooper et al., 1984), used the British criteria (Russell, 1979) which require as a symptom the use of vomiting or laxatives for weight control. They found bulimics in a community study, but at

the much lower rates than the studies above. The incidence was 1.9% for young women of mean age 24.1. When those who reported vomiting for weight control in the past were included the prevalence was 6.5%. Their subjects were 369 consecutive attenders at a family planning clinic.

Self-Induced Vomiting

Self-induced vomiting and/or the use of laxatives and diuretics for weight control is associated with both anorexia nervosa and bulimia. Because these behaviors do not present the same problem of definition as "binge-eating", Cooper & Fairburn (1983) suggest they are better indicators of bulimic behavior than reports of gorging on food. The rates of vomiting reported across a number of studies on anorexia and bulimia are: Button & Whitehouse (1981) reported 2.5% of their student population vomited and, furthermore, 39% of those with high scores on the Eating Attitudes Test vomited (EAT Garner & Garfinkel, 1979); as cited above, Cooper & Fairburn (1983) found 6.5% of their subjects had used vomiting for weight control and 2.9% were currently vomiting; Garner, Garfinkel, and Olmsted (1983) found 9% of 770 female students had used vomiting, 5% were currently doing so; Crisp et al. (1976) found 3.2% of school girls vomited; Halmi et al., (1981) found 10% of their student population reported self-induced vomiting, that is, 12% of all females, 6% of all males; and Hawkins and Clement (1980)

report 3.5% of 225 females in their student population vomited. These rates are not as diverse as the bulimic rates presented. For example, the bulimic rates reported above range from the 1.9% in Cooper and Fairburn's study to 33% in Hawkins and Clement's. Because vomiting (as well as, the use of laxatives and diuretics) for weight control appear to be generally recognized as symptomatic of eating disorders their occurence appears to merit special attention.

Fairburn & Cooper (1982) report an unusual community study in which the entire population reported using self-induced vomiting for weight control. The researchers advertised through a popular British women's magazine for subjects who vomited. The first 800, of over 1000 who replied, were asked to complete two self-administered scales, one to test probable psychiatric disorder, the other a measure of eating attitudes (EAT, Garner & Garfinkel, 1979). Of the 669 subjects who satisfactorily completed forms, two groups were excluded, those who were not currently vomiting and those who fulfilled Russell's (1970) diagnostic criteria for anorexia nervosa (3.1% of the total). Fully 83% of the 499 remainding fulfilled Russell's diagnostic criteria for bulimia. Of these 56.1% reported vomiting at least once daily and the mean duration of the practice was 4.5 years. Most women were of normal body weight. On the eating attitudes measure, 89% scored

above the critera score indicating disturbed attitudes toward eating.

Anorexia Nervosa at Normal Weight?

Eating disorders in which a major weight loss is not an important criterion have been identified and although the disorders are analogous to bulimia in *DSM III*, researchers have coined various names to describe them. These include bulimarexia (Boskind-Lodahl & White, 1978), subclinical anorexia nervosa (Button & Whitehouse, 1981), abnormal-normal-weight-control syndrome (Crisp, 1981-1982), anorexic-like behavior (Garfinkel & Garner, 1982), dietary chaos syndrome (Palmer, 1979), bulimia nervosa (Russell, 1979), and binge eating syndrome (Wardle, 1980). In these, elements of anorexia nervosa and bulimia may be combined. Weight may range from well below normal to obese levels. Normal weight may be maintained only by periodic prolonged periods of abstinence alternating with bingeing or by severely limiting intake followed by resumption of a high caloric diet in the absence of bingeing (at which point individuals may become obese, Schwartz & Thompson, 1981). Or, purgatives or dieuretics may be used to maintain a desired weight. Some of these researchers argue that this atypical eating is the syndrome of anorexia nervosa at normal weights (Crisp (1979, 1981-82; Palmer, 1979).

In describing some differences between individuals

said to have "anorexia nervosa at normal weight" and the classic restrictive anorexics, Crisp lists characteristics similar to the bulimic anorexics described by Garfinkel (above). That is, impulsivity and bingeing alternates with avoidance and fasting in these cases. They show more depression, are more extroverted, have an imminent loss of control, are restless, have florid sexual fantasies and tendancies to alcoholism and stealing. Physiologically, they feel flushed, have a relatively enhanced resting metabolic rate, racing pulse, menstrual irregularity rather than amenorrhea, and EEGs may be abnormal due to fluid retention or electolytic disturbances. As well, they are apt to have high rates of activity for they appear especially restless. They may vomit or use laxatives ("purge") to keep their weight "normal". It seems unclear, then, that distinct syndromes are being described even in "restrictive anorexia", "bulimic anorexia", and "bulimia", let alone the host of other syndromes that may be synonyms for the latter two.

Garfinkel and Garner (1982), suggest that anorexia nervosa may occur along a continuum of severities blending at times into bulimia and obesity. That is, a drive for thinness, the starvation manifestations of anorexia nervosa, and some undetermined predisposing risk factors may all occur to varying degrees in the general population. The research and clinical reports cited above would appear

to support this. Garfinkel and Garner (1982, p. 33) suggest the distinctions between the full-blown syndrome with changes in the hypothalamic primary axis and mild forms "...is partly, but not entirely, related to severity both in terms of starvation effects and likely in psychological predisposing and perpetuating factors." They speculate that women with mild forms may be using weight control in the way that anorexics do, as a means of self-control and self-expression and to establish autonomy.

Carbohydrate-craving

Carbohydrate-craving is mentioned frequently in reports on anorexia nervosa and there is theoretical support for a connection between this specific craving and the syndrome (Hoebel & Leibowitz, 1981; Schacter & Rodin, 1974; R. J. Wurtman, Hefti, & Melamed, 1980). However, the notion that anorexics may have food cravings may need some explication before any specific craving is discussed. Although the meaning of anorexia is "without hunger", anorexia nervosa is considered a misnomer for the disorder and food craving is not inconsistent with the syndrome. Slade (1982) gives a prominent place to food craving/preoccupation in his functional analysis of anorexia nervosa and bulimia. While it cannot be denied that anorexia nervosa patients do consistently resist eating, patients with these eating disorders report constant hunger (Crisp, 1981-82; Garfinkel & Garner,

1982; Halmi, 1978; Hsu, 1980). Crisp (1979, 1981-82) suggests a true lack of hunger or anorexia exists only during ketone metabolism. Garfinkel & Garner (1982) report true anorexia only in the final stages when the patient is very weak. Because of reports of hunger in anorexia nervosa, Crisp suggests a disturbance in the serotonergic satiety mechanism. He says because anorexics (those with the behaviors of anorexia nervosa) avoid carbohydrates, as do many dieters, they may ingest an insufficient amount of tryptophan (Crisp 1970b, 1978, 1979, 1981-82). Carbohydrates provide the serotonin precursor tryptophan. Crisp points to evidence from the Wurtmans' animal research that such carbohydrate avoidance alters neurological and endocrine functioning (for reviews see R. J. Wurtman, 1982; R. J. Wurtman et al., 1980). Specifically Crisp claims carbohydrate starvation can cause the endocrine and physical regression to pubescense seen in anorexia nervosa. Research has shown carbohydrate deprivation can alter insulin response (Hales & Randle, 1963) and alter behavior. Malabsorption of carbohydrates can cause confusion, depression, and signs of dementia (Gibbons, Barr, Bridger, & Leibowitz, 1979; R. J. Wurtman, Larin, Mostafapour, & Fernstrom, 1974). J. J. Wurtman's description of humans who crave large amounts of carbohydrates resembles other researchers descriptions of bulimics (J. J. Wurtman, 1983; also J. J. Wurtman et

al., 1983; Wurtman & Wurtman, 1981).

Some support for a serotonergic disturbance in anorexia nervosa comes from the report of reduced dopamine and serotonin turnover in anorexics (Kay, Ebert, & Lake, 1980, cited in Garfinkel & Garner, 1982) and low plasma-free tryptophan in anorexics even after weight gain (Coppen et al., 1976; Garfinkel & Warsh, cited in Garfinkel & Garner, 1982). As well, Hopkinson (1981) has found L-tryptophan useful for female patients who, rather than lose, gain weight in clinical depression. Possibly such females are "bulimic-like". Cyproheptadine which antagonizes serotonin, has helped some anorexia nervosa patients (Baranowska & Zglicznski, 1979) but not all (Vigersky & Loriaux, 1977). Because norepinephrine is also part of the satiety mechanism, it could be involved too. Amitriptyline, which blocks the presynaptic uptake of norepinephrine and so increases the availablity of norepinephrine, produces weight gain and carbohydrate craving in depressed patients (Paykel, Mueller, & de la Vergne, 1973). The drug has been useful in anorexia nervosa (Needleman & Waber, 1977). Amytriptyline and L-tryptophan have been used together in depression (Thompson et al., 1982). Perhaps the anorexics described as depressed and not active have a serotonergic disturbance.

Obligatory-running

In another vein, some researchers currently see activity as being a critical factor in anorexia nervosa. Yates and her associates argue that "certain distance runners share the traits, conflicts, and adaptive style of anorexic women" and are at high risk for depression, anorexia, and other disorders (1983, p. 225). Their term for these high-risk individuals is "obligatory runners" (a term that will be adopted in the present study). Their runners, however, are typically mature males and, as noted, anorexia nervosa is rare in males. It is nearly unheard of in mature males. Yet an athletic analogue of anorexia nervosa has been reported in young athletes in which both genders appear to be at equal risk (Chipman et al., 1983; Smith, 1980). Dieting by young men and women to reduce body fat for sports such as rowing, swimming, gymnastics, and wrestling may be the key factor in this analogues. As well, male weight lifters have been noted to develop the bingeing and vomiting sequence of bulimia during training when trying to maintain low body weights (Tcheng & Tipton, 1973; Tipton & Tcheng, 1970).

Anorexia nervosa has been found at high rates in female ballet dancers (Garner & Garfinkel, 1978, 1979, 1980; Garfinkel & Garner, 1982). The researchers suggest that a "drive for thinness" and thus dieting, rather than exercise, is the critical factor. Fears et al. (1983)

have examined the recent literature on the considerable incidence of secondary amenorrhea in females who are long-distance runners, ballet dancers, or swimmers. The focus is on amenorrhea because of its relevance to anorexia nervosa. Fears et al. maintain that while anorexia nervosa patients have amenorrhea it results from hypogonadatropic hypogonadism, which is correlated with weight loss. They suggest the effects of physical exertion on ovarian function may compound the problem but not cause it. However, whether weight loss and exercise are synergistic or additive is not yet known.

Exercise plays an integral role, interacting with severe dieting, in the animal analogue of anorexia nervosa described by Epling et al. (1981, 1983). In the paradigm that produces "self-starvation" in rats and mice, little is eaten, producing dramatic weight loss. There is little reduction in activity until the animals are very weak. Death can result but if animals are removed from the situation, recovery is rapid (Epling et al., 1981; Routtenberg, 1968; Routtenberg & Kuznesof, 1967).

Possibly the exercise analogues are appropriate for a distinct subgroup of anorexia nervosa patients. Because overactivity is associated with greater weight gain during treatment, Halmi and her associates (1979) have suggested that the overactive women form a subgroup of patients that are not as seriously ill. Further indication that activity

might be a diagnostic indicator of either stages or subtypes of anorexia nervosa comes from the fact that high activity is not a consistent symptom. While high activity is noted by some researchers (Bemis, 1978; Crisp & Toms, 1972; Kron, Katz, Gorzynski, & Weiner, 1978) many other researchers describe some hypoactive anorexics who appear to have the lethargy of depression (Dally, 1969; Halmi, Goldberg, Eckert, Casper, & Davis, 1977; Johanson & Knorr, 1974, 1977; Needleman & Waber, 1977). Activity may be another important distinction between the anorexic subgroups of "restricters" and "bingers". Fairburn and Cooper (1982) found 61.3% of 499 women who fulfilled Russell's criteria for bulimic anorexia used exercise as part of their weight control. Or high activity may be associated with "the anorexic diet". Crisp (1979) has suggested activity, or "foraging behavior", is associated with the high arousal and low BMR, seen in severe starvation, especially if it is carbohydrate starvation.

Gender Effect in Eating Disorders

Except in the athletic and animal analogues of anorexia nervosa, gender differences have been prominent in all of the above. As noted, the ratio of male cases to females has ranged from 1:10 to 1:20 (Beumont et al., 1972; Crisp & Toms, 1972; Falstein et al., 1956; Hasan & Tibbetts, 1977; Hay & Leonard, 1979; Hogan et al., 1974; Sreenivasan, 1978; Swann, 1977). It was also noted above

that researchers have not found any increase in the incidence of male cases in contrast to the increase in female cases (Bruch, 1978; Garfinkel & Garner, 1982; Jones et al., 1980). Whatever has contributed to the increase in female cases has not apparently had the same effect on males.

Clear cut gender differences have been found in studies on bulimia too (Hawkins and Clement, 1980; Mitchell & Pyle, 1982; Wardle, 1980). Hawkins and Clement reported over two-thirds of the female undergraduates (79%) and nearly one-half of the males (49%) reported binge-eating occurrences. Although there was no significant difference in the number of males reporting that they ate until painfully full, none of the males reported "unwanted thoughts of food", going "out of control completely" during a binge, or that they "hated themselves" or were depressed after a binge. The researchers suggested females more readily label themselves as bingers. In the Halmi et al. report (1981) in which 13% of their college sample had all of the major *DSM III* symptoms of bulimia, 87% of bulimics were female and only 13% male.

Self-induced vomiting, which is associated with both anorexia nervosa and bulimia would seem to be almost exclusively a female strategy. Only Halmi et al. (1981) reports a proportion of male vomiters. In their student population 10% reported self-induced vomiting: 12% of all

females; 6% of all males. However, it was noted above that male weight lifters have been noted to develop a bingeing and vomiting sequence during training when trying to maintain low body weights (Tcheng & Tipton, 1973; Tipton & Tcheng, 1970).

Gender, Dieting, and Eating Disorders

It has been suggested that all the following features of anorexia nervosa can be attributed to the prevalence in this culture of dieting for unrealistic levels of thinness: the increased incidence, the low incidence in males, the mere handful of cases in blacks in this culture (Jones et al., 1980), and the rarity of cases in countries that are outside the influence of "Western" culture (e.g. Bodhinayake, 1981). Support for the prevalence of dieting for unrealistic weights comes from contrasting the weight norms, which have increased in the past 20 years, with evidence that the ideal weights of young women have decreased (Garner, Garfinkel, Schwartz, & Thompson, 1980; Metropolitan Life, 1983). The ideal weights may be as low as 85% of normal weight (Fairburn & Cooper, 1982). The high rate of bulimia in normal weight female populations has also been attributed to the prevalence of dieting (Wardle, 1980; Wardle & Beinart, 1981). Bulimia is hypothesized to be a consequence of severe dieting. Both Garfinkel and Garner (1982) and Crisp (1970, 1978, 1979, 1981-82; Crisp & Stonehill, 1971) have put forth

complementary theories of eating disorders which can be interpreted as "dieting" theories. The nucleus of Crisp's theory was mentioned above under the heading "Carbohydrate-craving". The Garfinkel and Garner theory is sociocultural, that is, the ideals of the culture provide the motivation, but dieting is a central mechanism.

Crisp presents case studies to support his thesis that the increase in anorexia nervosa and bulimia may result from women's attempts to hold their weight below that which is biologically adaptive. Further support is gained from reports of dieting to combat premorbid obesity in anorexia nervosa (Beumont, 1977; Bruch, 1977; Crisp, 1981-82; Crisp & Stonehill, 1971; Crisp & Toms, 1972; Dally & Gomez, 1979; Duddle, 1973; Falstein et al., 1956). Often a 5-10 Kg weight loss, preceded amenorrhea and anorexia. Dally & Gomez (1979) advise 80% of their anorexia nervosa patients reported dieting because they felt fat. Whereas not all studies report premorbid dieting, undifferentiated cases of bulimic and restrictive anorexics may account for the contrast between early studies which report dieting and those which do not (for a review see Bemis, 1978). That is, the discrepancies in reports could be accounted for because bulimic anorexia has only recently been described and because 50% of anorexic cases may be bulimics. The restrictive anorexics often do not admit to dieting. Many of the males anorexia cases appear to have begun with

dieting (Crisp & Toms, 1972; Hay & Leonard, 1979; Sreenivasan, 1978). However, these results are limited by the imprecise retrospective reporting of case studies. Current observations carry more weight, such as Crisp's (1981-82) observation of the symptoms of anorexia nervosa in grossly obese patients who are dieting and sustaining considerable weight losses.

Better support for "dieting" theories comes from the Minnesota experimental studies (Keys et al., 1950) of semi-starvation in male volunteers. Dieting continued until 20% of body weight was lost. Bulimia appeared in 4 of the 36 subjects during refeeding and extreme hunger was often reported after large meals. This experimental starvation demonstrated that most of the attitudes and behaviors of the anorexic patient are the result of starvation: obsessional behaviors of a wide variety, disturbed sleep, food-related dreams, food preoccupations, food fads, "dawdling over meals, hiding and stealing food and objects, indecisiveness, and exaggeration of subjects' previous personality traits" (Keys et al., 1950; Schiele & Brozek, 1948). These are the starvation effects, which account for some of the dramatic manifestations of anorexia nervosa, and which Garfinkel and Garner (1982) suggest do occur on a continuum from mild to severe.

If dieting is a precipitator of bulimia and/or anorexia nervosa, the high incidence in females, compared

to males, could be accounted for easily. The pursuit of thinness appears to be specific to the upper and middle class females in our culture; males prefer to be wider and huskier than they are (Crisp, 1979; Garner & Garfinkel, 1982; Garner, et al., 1980; Gray, 1977; McCrea, Summerfield, & Rosen, 1982). Above it was noted that dieting to reduce body fat for sports such as rowing, swimming, gymnastics, and wrestling was seen as a key factor, in the "athletic analogue" of anorexia nervosa. Notably, the few cases of anorexia nervosa in blacks have been in females from upper/middle class families and thus the families could be expected to have typical Western values (Garner, 1983).

Not only is there evidence that dieting increases with social class (Garner et al., 1980), there is abundant evidence that "feeling fat" and dieting is widespread among females in many countries influenced by Western cultural values. Nylander (1971) found in Sweden that 50% of 1200 girls age 14-19 considered themselves overweight and by 18 years of age 40% had dieted. In Israel, interviews of all 8th grade youngsters in 6 schools revealed 7% of boys and 21% of girls dieted for weight control (Kaufmann, Poznanski, & Guggenheim, 1974). While most (54%) dieters were obese, an appreciable number of non-obese were also dieting, including 4% who were thin by objective measurements. Perception of body build, rather than actual

build, provided the motivation for dieting. Huenemann, Shapiro, Hampton, & Mitchell (1966) found 50% of 1000 U.S. college women felt overweight although only 25% were. A number of other studies have shown that young women are the age-sex group most apt to be dieting (Dwyer & Mayer, 1970; Hager, 1981; Wardle, 1980). But as not all dieters become anorexic, there must be some critical factors which induce some dieters to become anorexic. Garfinkel and Garner (1982) propose extreme dieting and drive for thinness must interact with other predisposing forces. Crisp suggests some specific psychological as well as physiological predisposing forces, some of which have been reviewed above (Crisp, 1970a, 1970b, 1978, 1979, 1981-82).

RESEARCH DESIGN

To investigate the strength of the relationship between obligatory exercise and the types of behaviors seen in anorexia nervosa as well as the relationship between carbohydrate-craving and bulimia a measure of each of these qualities is necessary. The Eating and Attitudes Test or EAT, a self-report measure of anorexia nervosa symptomatology, developed by Garner and Garfinkel (1979), has appeared as a screening device for anorexic behaviors. It has been abbreviated from the original 40 items to 26 items on the basis of a factor analysis of the original scale (EAT-26, Garner, Olmsted, Bohr, & Garfinkel, 1982). Whereas, there were no differences between bulimic and restricter anorexia nervosa patients on total scores on the EAT-40 and the EAT-26, the groups did indicate significant differences on the EAT-26 factors. This measure, then, would appear to identify the attitudes and behaviors common to both restrictive anorexics and bulimic anorexics.

Because similar measures do not exist for assessing obligatory exercise and carbohydrate-craving it would be necessary either to add items or compose two additional scales. The former route was chosen in the present study. As well as adding items on these two topics, a number of items relating to bulimia were added in an attempt to balance the large number of items related to dieting in the EAT-26. These items came primarily from the scale used by

Halmi et al., (1981) to assess bulimia in university students. Although both Halmi et al., (1981) and Hawkins and Clement (1980) have developed bulimia scales, neither of the bulimia scales have been well standardized. However, it seemed advisable, where possible to use items that have been used before.

Some changes were made to the EAT-26 items because of problems with its format. Response style bias is a problem for all self-report measures (Carlsmith, Ellsworth, & Aronson, 1976; Krantz, 1978; Selltiz, Jahoda, Deutsch, & Cook, 1959). An obvious problem with the original EAT was that in 35 of the 40 items the most "symptomatic" anorexic answers line up under the Likert quantifier "Always". A response set could be formed easily to such items, especially as "Always" is the first available answer (Nachmias & Nachmias, 1981). While it has been argued that clinical self-reports are not subject to response sets normally found to bias the self-reports of social psychology, the bias induced by social desirability is noted as an exception (Derogatis, Lipman, Rickels, Uhlenhuth, & Covi, 1974). However, such a bias would lead to underreporting of bulimic and anorexic symptoms such as vomiting and fear of being unable to stop eating and studies cited below suggest undesirable symptoms may be overreported. The EAT does require attitudinal responses from subjects, as well as some straight forward reporting

of past behaviors, therefore, there seems no reason to claim that it does not need to meet the standards of other attitude measures (e.g. standards in Ajzen & Fishbein, 1977). Ajzen & Fishbein, indicate some confidence may placed in such measures, subject to the short comings noted. Self-report measures have the advantages of economy, actuarial scoring and access to phenomenological information that is not available through other means. However, a problem with such self-reports may be subjective definitions of bingeing or extreme dieting. Garner et al. (1983a) suggested many studies fail to distinguish between severe bulimia and what would appear to be clinically insignificant "binge eating" such as that done at Thanksgiving. Post interviews, however, could clarify subjects' definitions and verify that diagnostic criteria are met. Many studies using self-reports have not conducted any interviews to verify answers. Button and Whitehouse (1981), Clarke and Palmer (1983) and Garner and Garfinkel and their associates are unusual in conducting interviews.

Screening for Uncommon Disorders

Both forms of the EAT have been used, apparently with some success. The original EAT has been used as a screening instrument for detecting the incidence of anorexia nervosa in groups considered at high risk for the disorder (Garner & Garfinkel, 1978, 1980), as well as for

examining abnormal eating patterns among college students (Button & Whitehouse, 1981; Thompson & Schwartz, 1982). However, William, Hand, and Tarnopolsky (1982) point to methodological problems in using scales to screen for uncommon disorders.

The William et al. concern is primarily with the use of a cut-off point to discriminate between cases and noncases. In identifying cases in a population they advise that the positive predictive value (PPV), is most important. The PPV is the probability that an individual who has an above-threshold score on the screening questionnaire, is actually a case. But, as they demonstrate mathematically, the positive predictive value drops sharply if the prevalence of a disorder falls below 20% in the population being studied. Therefore, while the EAT has a very high positive predictive value in anorexia nervosa patients, if the prevalence of the disorder is 10%, (and it would be expected to be no more than that in a population of first and second year university women) then the PPV would be less than 0.5, that is, more than half of those with high scores would not be cases.

Because of the William et al. caution, the rates of false positives in the studies using the forms of the EAT are of interest. In their original study Garner and Garfinkel (1979) found about 13% of their "normal" controls scored at or above the cutting point of 30. In other

studies Garfinkel and Garner report (1982): 38% of ballet students versus 12% of university students scored 30 or more, although none of the latter were considered anorexic, as well, 29% of ballerinas and 27% of models had high scores without fulfilling diagnostic criteria for anorexia nervosa. In these populations, there were also high rates of cases who did meet criteria when interviewed: 6 of 112 (5%) ballerinas in one study (Garner & Garfinkel, 1978) and in another study, 12 of 183 (6.5%) dancers and 4 of 56 (7%) models (Garner & Garfinkel, 1980). Consistently, they have found none of the university students to be anorexic. However, Button and Whitehouse (1981), examining British technical students, found cases in their population. Although they used a cutoff score of 32 on the EAT, rather than 30, some 6% of their female population exceeded that score. No males did. In interviews they found among the 28 high scoring females, 2 met clinical criteria for anorexia, 5 were considered "normal dieters", and the remaining 21 they suggested had subclinical anorexia nervosa. Twelve of the remainder were "vomiters and or purgers". The other 11 they said indicated "abnormal preoccupation with weight and food intake" (Button & Whitehouse, 1981, p. 513). Clarke and Palmer (1983) found about 11% of their female population, but none of the males, scored 30 or more on the EAT. They found none of those who attended interviews could currently meet

diagnostic criteria for anorexia nervosa but they did fit the pattern of either bulimia or Palmer's (1979) "dietary chaos" syndrome, giving a minimum prevalance for clinical levels of eating disorders of about 3% in their population. Thus 8% of the females were false positives.

The Necessity for Interviews

Garner et al. (1983b) suggested the EAT was not intended to be used, as many have used it, to screen for clinically valid cases of anorexia nervosa. They advise that, while the EAT may be useful for preliminary screening, cases should be confirmed by clinical diagnosis.

Williams and associates also stress the need for interviews or other varifying criteria:

> if the EAT is to be used to compare populations which differ in the true prevalence of anorexia nervosa, the meaning of a high score will be different in different populations. It would thus be unwise to base such a comparison on test scores alone, in the absence of more detailed assessment. (William et al., 1982, p. 433)

This would apply to the use of bulimia scales as well. However, in the bulimia studies cited, no comparisons were made with clinical populations and no interviews were conducted, therefore no estimation of their PPV is possible.

Because of these cautions a second phase was deemed necessary in the present study. Thus first, an exploratory questionnaire, consisting of the EAT-26 items, plus items

on obligatory-exercise, carbohydrate-craving, and bulimia, was given to large groups of subjects. Following this those who answered subscales of items in a way that indicated they might be anorexic- or bulimic-like, carbohydrate-cravers, or obligatory-exercisers, were interviewed, along with some who indicated no such behaviors. Interviews were intended to confirm the answers on the first questionnaire and obtain a broader range of information on eating and exercise behaviors.

Other Scales

Several scales were considered useful in gathering more information in the interviews. Recently, Garner et al. (1983a,b) published the Eating Disorder Inventory (EDI), to measure psychological dimensions postulated to be fundamentally related to anorexia nervosa and bulimia: drive for thinness, interoceptive awareness, bulimia, body dissatisfaction, ineffectiveness, maturity fears, perfectionism, and interpersonal distrust. This questionnaire thus differs in focus from the EAT. They suggest the EDI may be used in the same manner as the EAT but caution "...it may lack external validity, in that elevated scale scores among non-clinical subjects cannot be assumed to reflect the same psychopathology inferred for the patient group." However, using the EDI, Garner et al. (1983b) were able to distinguish between normal dieters and another group of college women who were highly similar to

anorexia nervosa patients in almost every way. Evidenced by the false positive rates above, the EAT has been unable to make such distinctions. On the EDI the dieters appeared like the patients on three subscales (drive for thinness, body dissatisfaction, and perfection) but not on other scales, such as maturity fears, interpersonal distrust, and ineffectiveness. The "anorexic-like" women showed similarity to anorexics on all scales. Of 237 female psychology students, 24 showed extreme weight preoccupation (by their subscale scores), and of 66 dance students, 14 were similarly extremely weight preoccupied. Of these 38 extreme scores, 22 were determined to be normal dieters and 16 were "anorexic-like".

A measurement of clinical depression was used during the interviews to measure another quality associated with eating disorders. Associations have been mentioned above between depression and 1) carbohydrate-craving, 2) bulimia and 3) bulimic-anorexia. As well, there has been the suggestion, noted above, that anorexia nervosa is analogous to or is a type of clinical depression (Abraham, Beumont, & Cobbin, 1981; Coppen et al., 1976; Halmi, DeKirmenjian, Davis, Casper, & Goldberg, 1978; Needleman & Waber, 1977). Other measures were felt necessary during interviews. The researcher completed an Interview Data Sheet that had a selection of items considered appropriate from the *Hamilton Rating Scale for Depression*, a scale

concerned with the behavioral and somatic features of depression that is in common clinical use (Hamilton, 1960). The interviewer assessed evident signs of depression and also rated the subjects' behavioral similarities to the behaviors and attitudes seen in bulimia and restrictive anorexia. A self-report measure, was devised, patterned on that used by Halmi et al., (1981) in order, during interviews, to quantify such variables as exercise rates, the use of vomiting, diuretics, and laxatives as well as other symptoms of eating disorders such as menstrual difficulties.

Subjects

There are two main reasons for using university students as subjects. First, there is the high incidence of bulimia found in both male and female university students by a number of researchers. The second reason is that a measurable proportion of females of the age of students in their first two years of university may be expected to be anorexic-like. Crisp et al., (1976) found 1% of girls above age 16, in private schools, had severe anorexia nervosa. They and Garfinkel and Garner (1982) predicted higher rates at university where most women are 18 to 20 years of age. Epidemiological studies suggest between 1 and 10% of women in this high risk age group will either have anorexia nervosa or will have dieting behaviors analogous to anorexics (Crisp et al., 1976; Duddle, 1973;

Garner and Garfinkel, 1980; Jones et al., 1980). Therefore, it was considered useful to assess the extent of anorexic-like and bulimic-like behaviors in the population.

As well, there is a theoretical reason for studying a "normal" population. That is, Garfinkel and Garner (1982), argue that anorexia nervosa may occur along a continuum of severities blending at times into bulimia and obesity. Recent research would appear to support this. While the continuum may tend toward normal, it is believed there is merit in studying variations in the mild forms of eating disorders.

Because a factor analysis of the research scale was planned and because it has been recommended that in factor analysis the number of subjects should be 10 times the number of items on the scale used, 640 subjects were considered the ideal number for the present study (Nunnally, 1976). The expected gender differences would suggest that 640 members of each gender be used, however, because of the literature on obligatory-running and an athletic analogue of anorexia, which suggest males may be at equal risk, it was decided not to select female subjects only and a total of 640 was therefore considered a sufficient number.

HYPOTHESES

Based on the incidence reported in epidemiological studies, it was expected that within those females scoring in the top 10% on the EAT-26, most should have behaviors similar to either bulimic or restrictive anorexics. Further, because clinical cases diagnosed as anorexia nervosa are found to be approximately half bulimic- and half restrictive-anorexics, it was expected that approximately half of high-scoring females might be bulimic-like (Garfinkel & Garner, 1982). Specificly, bulimic characteristics measured during interviews were expected in the subjects who obtained high scores on the "Bulimia and Food Preoccupation" factor of the EAT-26. It was hypothesized that those with extreme scores on the EAT-26 factors relating to "Dieting" would have high scores on a subscale of items posited to assess "obligatory running" or obessional exercise and that those with high scores on the EAT-26 factor relating to bulimia and food preoccupation, would also have high scores on items posited to assess carbohydrate-craving. Regarding depression, those with high scores on the "Bulimia and Food Preoccupation" factor of the EAT-26 and those with high scores on carbohydrate-craving were expected to be higher on the measure of depression than the obsessional exercisers, but those with high EAT-26 scores based on the "Dieting" factor were expected to range between the former

and latter. Those with low scores on all criteria were expected to have the lowest depression scores. The females with high scores on the EAT-26 and the males and females with high scores on the obligatory-running items were expected to have scores on the EDI subscales within the range of anorexia nervosa patients' scores.

METHODOLOGY

Subjects

The subjects were 615 students in introductory psychology courses at the University of Alberta. The data from two students were dropped from analysis, one because his command of English did not extend to words such as vomit, flab etc., and the other because an assistant inadvertantly discussed the research in her presence. Of the 214 males and 399 females with acceptable data, 45 males and 75 females were selected for interviews.

Scales

Subjects completed the Exercise and Eating Questionnaire (EEQ), in group testing. In the interviews subjects were asked to complete three measures: the *Eating Disorder Inventory* (EDI, Garner et al., 1983b), the *Carroll Rating Scale for Depression* (CRS, Carroll, Feinberg, Smouse, Rawson, & Greden, 1981; Smouse, Feinberg, Carroll, Park, & Rawson, 1981), and a self-report test, patterned on that used by Halmi et al. (1981). The researcher completed an Interview Data Sheet that had a selection of items considered appropriate from the *Hamilton Rating Scale for Depression* (Hamilton, 1960), the interviewer's rating of the subjects behavioral similarities to bulimic and restrictive anorexic behaviors, and oral temperature, pulse rate, height and weight.

Group Testing Scale

To test the relationships hypothesized it was necessary to have a research instrument that would measure anorexic- and bulimic-like behaviors, but also "carbohydrate-craving" and obsessive attitudes toward exercise and therefore high rates of exercise as well.

The EEQ (Exercise & Eating Questionnaire, Appendix A), written for the first phase of the study, was composed of 64 attitudinal statements plus 21 survey questions. The survey questions obtained demographic information, such as age, weight, height, and quantitative information, such as the frequency of dieting and exercise. Items on the EEQ were derived from several sources. Many of the statements were based on items used in other research and therefore have face validity (e.g. Garner, Olmsted, Bohr, & Garfinkel, 1982; Halmi, et al., 1981; Herman & Mack, 1975; Herman & Polivy, 1975; Kelly, Patten, & Johannes, 1982; Slade, 1973; J. J. Wurtman, 1983; R. J. Wurtman, 1982; J. J. Wurtman et al., 1983; Wurtman & Wurtman, 1981; R. J. Wurtman et al., 1974; R. J. Wurtman & Pardridge, 1979). However, the primary source for the EEQ was the EAT (Garner & Garfinkel, 1979). The EEQ has embedded within it the EAT-26 a condensed 26 statement version of the EAT which the authors suggested would obtain substantially the same results as the original 40 item test (Appendix B, Garner et al., 1982).

Minor revisions were made to make the EAT-26 statements more androgynous (e.g. "thinner" became "slimmer", "fat" became "flab"). Item 30 had a major problem in offering no definition of carbohydrates so it was extended by an example. Only minor revisions were made to 23 of the statements from the EAT-26: 3, 5, 7, 17, 18, 21, 23, 27, 29, 30, 31, 32, 34, 35, 36, 37, 39, 46, 50, 52, 58, 60, 61. Three others were revised: 11, 42, 55. Statement 11 was reversed in meaning by changing the original "Avoid foods with sugar in them." to "Crave sweets (e.g. chocolate bars, desserts, sugar-loaded snacks)." Thus statement 11 provided a response for carbohydrate-cravers as well as dieters and complemented statement 30: "Particularly avoid food with high carbohydrate content (e.g. bread, potatoes, rice, etc.)". Statement 42 was reversed in meaning by changing "less time" to "longer than" in "Take less time than others to eat my meals". And statement 55 was reversed in meaning by changing "Feel uncomfortable after eating sweets" to "Feel calmed down after eating sweets". Reversing some of the EAT-26 statements was considered desirable because so few of them were answerable by negative responses.

Statements on the EEQ expected to assess carbohydrate craving were: 4*, 12, 24, 25, 38, 51, plus three that came from the EAT, numbers 11, 30*, and 55, as well as two from the EDI, numbers 10 and 28 (the * indicates a negatively keyed item). Statements 24, 25, 38, and 55 relate to affect

but most relate to food habits. Statement 55 is discussed above as it is a reversal of one of the original EAT-26 statements. Statement 28 attempts to measure another aspect of this attitude. Statements 4, 11 and 14 assess food preferences, but 14 is present to complete the major food groups rather than as a measure of carbohydrate-craving. J. J. Wurtman has found carbohydrate-cravers do not prefer proteins but the evidence is ambiguous on preferences for fatty foods. Statement 30 and 51, assess opposite attitudes, by the use of the word "desire" in place of "avoid" in the wording of 30, one of the original EAT-26 statements (Particularly avoid food with high carbohydrate content (e.g. bread, potatoes, rice, etc.).

To assess the relationship between high rates of exercise and the characteristics of disturbed eating, statements were composed on exercising: 6, 43, 49 53*, 54, 59, 62, & 63. Two from the EDI, 15 and 22, were used because they were similar to the Yates et al., 1983, description of obligatory runners. It should be noted that two statements, EEQ 9 and 34, that appear to relate to exercise were not considered useful in assessing "obligatory-running" because they measure the value of exercise for weight reduction rather than as a desirable activity in itself. Both statements were expected to reflect the attitudes of dieters.

In total, 11 statements that appeared on the EEQ were

taken from the EDI i.e. 1, 10, 13, 15, 22, 28, 44, 47, 48, 57 and 64. Of those not mentioned above, 1, 44, 48, and 57, related to interoceptive awareness. The others, 13, 47 and 64, are bulimic statements. Other statements were derived from relevant literature. For example, two statements on body temperature, numbers 8 and 40, were added to the EEQ because of reports that anorexics have very low body temperatures (Davies, Fohlin, & Thorien, 1977; Wakeling & Russell, 1970) while bulimics have raised body temperatures. Two related to purging, numbers 33 and 41, were added because of its importance to bulimia.

Answers were requested on a Likert 6-level, forced-choice scale: Always, Very often, Often, Sometimes, Rarely, and Never - with no midpoint. "Never" comes first rather than "Always" so that the favored answer position worked against the hypotheses of the study (Nachimas & Nachimas, 1981). Attitudinal statements were arranged in a general psychological order, so that the more obviously deviant or anorexic statements such as those on vomiting, are near the end. Individual scores for the EEQ, and its subscales, were calculated by adding the weighted values for each item. Weighting of items replicated weighting in the EAT-40 and EAT-26: the most symptomatic answer to each item was scored 3, the answer adjacent to it 2, and the next adjacent answer 1, with the other three possible answers scored 0 (Garner & Garfinkel, 1979).

Interview Scales

In interviews, the EDI (*Eating Disorder Inventory*, Appendix C) was used because of its purported ability to differentiate between "dieters" and "anorexic-like" women (Garner et al., 1983b). It assesses psychological and behavioral traits common in anorexia nervosa and bulimia. The CRS (*Carroll Rating Scale for Depression*, Appendix D) was administered because of reports that anorexia nervosa is analogous to, or is, a type of clinical depression (Abraham et al., 1981; Coppen et al., 1977; Halmi et al., 1978; Needleman & Waber, 1977). The CRS correlates highly with the most frequently used *Beck Depression Inventory* (BDI, Beck, Ward, Medelson, Mock, & Erbaugh, 1961). Both BDI and CRS appear to be statistically valid but the CRS has the advantage of being designed to parallel the *Hamilton Rating Scale* (HRS), a scale concerned with the behavioral and somatic features of depression, that is in common clinical use. The BDI is more concerned with the psychological and cognitive features of depression. Because of these differences and because the interviewer's report was based on the Hamilton Rating Scale, the CRS was selected. Instructions to the CRS advised subjects to answer on the basis of how you have felt "during the past few days", in order to standardize the answers.

The interview self-report (Appendix E), patterned on that used by Halmi et al. (1981), quantified a number of

behaviors such as vomiting and purging. With the EEQ and the interview questions, all of those interviewed were asked all of the questions used by Halmi et al. (1981) in their survey of bulimia symptoms among college students.

The Interview Format (Appendix F) completed by the researcher had a selection of items considered appropriate from the *Hamilton Rating Scale for Depression* (Hamilton, 1960). Other items added were the interviewer's rating of a subject's binges (whether they would meet *DSM III* criteria), as well as, the interviewer's rating of the restrictive nature of a subject's eating pattern (whether it is anorexic-like). Completion of the Interview Data Sheet also involved taking the subjects' pulse, oral temperature, height, and body weight. Height and weight measurements verified self-reported figures on the EEQ. Oral temperatures were taken with clinical thermometers and pulse was taken at the wrist by counting the beats for 30 seconds. Body weight and height were measured on a clinical health scale. Measurements deviating from the expected standard were rechecked.

Procedures

Group testing was done over a period of two weeks with groups ranging in size from 10 to 200. One course credit was given for participating. The group testing script is Appendix G and Appendix H is the group testing debriefing.

Interviews were conducted 2-8 weeks after group

testing and were always on a one-to-one basis. The three self-report measures were always given in the same order. One course credit was given for participating. Appendix I contains the telephone script used to invite subjects to interviews. Appendix J contains the interview debriefing.

Interviews served to gather more information on some samples of interest in the population but the chief purpose was to verify answers on the EEQ. That is, subjective definitions of terms like bingeing were clarified, the use of laxatives, diuretics, and vomiting were quantified, and self-reported behaviors were checked in order to assess the individuals data in light of current diagnostic criteria for anorexia nervosa (Garner & Garfinkel, 1982) and bulimia (*DSM III*, 1980). As well, correlations between the objective measures (body weight, temperature, pulse, etc.) and symptomatology was assessed.

Disproportional stratified random sampling was used to select interview subjects. Irrespective of the proportion found in group testing, 15 subjects were chosen to represent those with high bulimic scores, high anorexic scores, high obligatory-running scores, high carbohydrate-craving scores, and those with low scores on all of the foregoing. Whereas both males and females could be found to represent the latter three categories, no males scored as high as females in the bulimic and anorexic categories; therefore, no males were chosen in these categories.

To select students with behaviors analogous to anorexics and bulimics the EAT-26 statements embedded within the EEQ were used. Previous studies using the EAT-40 or EAT-26 with non-clinical populations have generally used the recommended cutoff scores as the criteria to determine anorexic-like behavior. For the EAT-26 that score is 20. Research with the EAT-40 has indicated that those above the cutoff score have many behaviors similar to those with anorexia nervosa, with false positive rates ranging from 5% to 13%. However, there are methodological problems in screening normal subjects for uncommon disorders (William, et al., 1982) and thus it was expected that the cutoff score of 20 for the EAT-26 would be much too low for the university population. Epidemiological studies suggest that within the top scoring 40 females (of 399) most will have the behaviors analogous to anorexics. Therefore, instead of using the suggested cutoff score as a criteria for subject selection, only females in the top scoring group were selected as representative of anorexic-like behaviors. The effective cutoff score thus became 29 (11% of females scored that or above).

The Garner et al., (1982) factor analysis of the EAT-26 determined three factors, 1) dieting, 2) bulimia and food preoccupation, and 3) oral control. As well as using the total EAT-26 score as a selection criterion, the statements which compose the second factor, "FAC2", obtained in the

Garner et al. (1982) factor analysis of the EAT was used to distinguish between anorexic-like and bulimic-like subjects. This was done because Garner et al. (1982) have found significant differences occur between the scores of bulimic and restrictive types of anorexia patients on this factor, whereas there are no differences on the total EAT-26 scores (or the EAT-40 scores). Therefore, of subjects having high scores on FAC2 (i.e. scores of 7 or more) 15 were randomly selected, the other 15 were randomly selected from among those with high total scores who had low scores on the bulimia selection criterion (FAC2). As reported above, preliminary scoring indicated no males with EAT-26 scores comparable to the female high scores and thus no males were selected for interviews. Scores on other subscales of the EEQ were not known at the time of the selection of these two groups.

After the groups most likely to be analogous to restrictive and bulimic anorexics were selected, four other interview groups were selected from those who scored highest on other criteria, that is, on the carbohyrate-craving statements (CHO) and the exercise statements (OB-R). Because both genders appeared to be well represented in the high scores on these it was decided to select subgroups with 15 of each gender for each of the subscales OB-R and CHO. It was noted at this time that the males randomly selected on the basis of their high scores on the OB-R subscale included

2 individuals with relatively high EAT-26 scores (19 and 23). Except for 3 persons the EAT-26 scores all were at or above the male average of 10.3. With the 3 low scorers removed, the group average on the EAT-26 was 14.

It was noted in randomly selecting from the female population, that a number of the subjects had already been drawn; as predicted those with high-scores on the EAT-26 also had high scores on OB-R and CHO. Selecting students for interviews was thus complicated considerably by the proclivity, particularly of females, to be high on more than one of the predetermined selection criteria (e.g. OB-R and CHO). Subjects, therefore, were selected as representative of bulimics or carbohydrate-cravers on the basis of the relevant criterion, independent of the other selection criteria. That is, the OB-R interview subjects were selected by randomly drawing those who met the OB-R criterion without reference to any other subscale scores or the EAT-26 scores. Simultaneously, those who met the CHO criterion were selected in the same manner on the basis of their CHO scores.

From the large number of students whose scores fell below the cutoff criteria for all three selection measures, "normal" groups of each gender were chosen randomly (N=15). These had low scores on the OB-R and CHO statements as well as on the EAT-26. All interview subjects were offered course credit for participation.

RESULTS

Data Analysis of the EEQ

Preliminary socring of the EAT-26 questions, that were embedded within the EEQ, indicated that only 8 of the 214 males, achieved scores above the cutoff score of 20 suggested by Garner et al. (1982). In contrast to the male results on the EAT-26, the females who scored above 20 formed a surprisingly high percentage: 26% or 105 of the 399 females tested. Of all females, 74% scored under 20, 11% scored 20 to 25 and 15% scored 25 or higher. Those who scored 29 or higher were 10.5% of the total female population. The odds ratio indicates females were 9 times more likely than males to have scores above the cutoff.

The results of the 614 subjects on all 64 items on the attitudinal section of the research questionnaire (EEQ) were subjected to principal components analysis. Seventeen factors with eigenvalues greater than unity were identified. These accounted for 63.6% of the variance, giving a reliability of approximately .8. Gender was used as a variable in the analysis. It loaded positively on the first factor. There was also a small negative loading on factor 4, that related to exercise attitudes.

Factor Analysis on Female Data

Because of the importance of gender to the first factor, that appeared to reflect dieting, and because of

differences between males and females on the EAT-26 scores, a principal components analysis was done on just the 399 female answers to the 64 attitudinal items. Again 17 factors emerged. These accounted for 65.3% of the variance. By examining the factors resulting from varimax rotation and employing only eigenvalues greater than or equal to 1.5, it was determined to use the resulting 9 factor solution rotated to the varimax criterion. Although this produced a number of small specific factors, they were sufficiently interpretable and were consistent with the exploratory nature of the study, that is, examining for the presence of anorexic and bulimic qualities in the sample. The 9 factors accounted for 50.3% of the total variance. Table 1 presents all 64 items, their loadings on the 9 factors, the eigenvalue for each factor, and the percentage of variance for which it accounts. Since only pure item loadings above .45 (meaning there were no other loadings of the same sign above .30), are used in the interpretation of factors, items that meet this criterion are flagged. The very high loadings, those above .75, are marked differently to distinguish them from medium loadings. The labels given each factor head the columns.

The items, ordered by the size of their loadings and organized by the factors they form, are found in Table 2. The first factor accounting for 20.8% of the total variance defined a positive attitude toward dieting and concern over

body weight. Six items loaded above .75. All were positive. Another 7 items had medium positive single loadings (between .45 and .74) and one had a medium negative loading. Two items (Nos. 28 & 30) loaded with an opposite sign on factor 7. Nearly all of the EAT-26 items that would be expected to load on the dieting factor loaded here. The exception were items 11 and 55, both of which had been reversed, and item 35 that had multiple small loadings. For item 35 the loading on factor 1 was negative but under .30.

Factor 2 accounted for 6.8% of total variance. Five items had positive medium single loadings and one had a negative medium loading. Because of the presence of items 5, 38, and 56 that are typical of bulimic responses, this factor reflects bingeing. The .41 loading of item 45 is consistent with the bingeing interpretation. However, the factor was interpreted as sweet-bingeing because of the presence of items 11, 12 and 55, all three mentioning sweets. As well, similar items that mention other types of food, or even other carbohydrates, did not load at the same levels. For example, item 4, had a negative loading but it was very small, being under .30. and items 14 and 51 similarly had loadings under .30, but they were positive. These are consistent with the interpretation that the bingeing is of a particular type. However, item 30, that might have been expected to load in an opposite manner to 51

had a negligible loading. A number of items that load on more than one factor have small loadings on factor 2, these include items 21, 36, 37, and 58, which characterize bulimia. The loadings between .20 and .30 include the two items on vomiting, items 39 and 61, that are also typical bulimic behaviors, suggesting for this population a weak relationship between sweet bingeing and vomiting.

The third factor was defined largely by items believed to tap "obligatory-running" attitudes although just four items had medium positive loadings. One had a low, but pure, negative loading. Unlike the view expressed in factor 1 where exercise is "primarily to burn off calories" this factor involves liking "running or exercising for its own sake". The OB-R selection criterion included positively coded items 6, 15, 22, 43, 49, 54, 59, 62 and 63, with negatively coded 53. Of those that were expected but did not appear on this factor, item 43 loaded .61 but also loaded on factor 1, whereas items 15 and 22 loaded on factor 9, and item 63 had small loadings on both this factor and factor 9. Finally, item 59 had a small loading on factor 4. Factor 3 accounted for 5% of the variance, thus the first three factors accounted for 32.6% of the variance.

The fourth factor had three of the four items that relate to vomiting and the use of laxatives and, therefore, was characterized as purging. Both items on the used of laxatives had high loadings, with "impulse to vomit"

obtaining a medium loading. The fourth item which would be expected under this interpretation is item 61, "Vomit after I have eaten". This loaded .64 but loaded as well on factor 6. Item 59, concerning taking pain killers to be able to exercise, had a small loading on this factor suggesting the interpretation might be broadened to drug use. Except for a scattering of 4 items loading between .20 and .29, most items load near 0 on this factor. Factor 4 accounts for 3.7% of the total variance.

Factor 5, accounting for 3.3% of the variance, had just three items by which to interpret it. All three items had loadings above .70. The items are from the "interoceptive awareness" subscale of the Eating Disorder Inventory, therefore, the factor was interpreted as reflecting that characteristic. Five of the items from that EDI subscale were on the EEQ. Besides the three loading on factor 5 there was item 10, that had nearly equal loadings on factors 1 and 2, and item 48, that loaded over .30 on factors 1 and 2 as well as on this factor.

Factor 6 also has only 3 items, 40, 46, and 52, with loadings that are, respectively, low, high, and medium. All suggest a quality of "thinness" or the maintaining of body weight below normal standards. Although items 46 and 52 suggest thinness more directly, item 40, that relates to body warmth, typifys the response of underweight individuals. Both items 46 and 52 are part of the "oral

control" segment of the EAT-26 but other items that would be expected to load here, such as items 3, 17, and 42 did not load. A related item, 23, loaded on both factor 6 and factor 2 and item 5, expected on factor 6, loaded only .27. Consequently, this factor cannot be interpreted as being the "oral control" component of the EAT-26, measuring restrictive anorexia. Both items that relate to vomiting had borderline loadings. Factor 6 accounted for 2.9% of the variance.

Factor 7, accounting for 2.8% of the total variance, had 5 items with medium loading, i.e. 14, 28, 30, 51, and 24. All but the last item suggest food-craving best characterizes this factor. Both cravings for fatty-foods and carbohydrates load here rather than on factor 2. Three things suggest factor 7 is an antithesis to factor 1. Items 28 and 30 that loaded on factor 1, loaded on factor 7 with the opposite sign, 28 being positive, 30 being negative. As well, item 30 is opposite in nature to item 51 that loaded positively here. This suggests that if factor 1 is characterized by dieting, this factor may be associated with food craving and overeating. The only item that does not relate to eating is item 24 on oversleeping. This characteristic is typical of carbohydrate-cravers and is a depressive symptom. Anorexics typically are early-morning-wakers but item 24 has no negative loading worth consideration.

Factor 8, appeared to reflect a unique pattern of eating or dieting. It accounted for 2.6% of the variance, having only three medium loadings. All three, 2, 20, and 45, represent a form of daily fasting. Although fasting is a restrictive type of eating like dieting, this factor appeared to be dissimilar to factor 1 in most respects. Only item 17, "Avoid eating when I am hungry." had small loadings on both factors 1 and 8, consistent with the interpretation that the pattern of dieting is what distinguishes this factor.

Factor 9 had two medium loadings, items 15 and 22, and three small loadings, items 3, 25 and 26. As both medium loadings relate to "perfectionism", with the items coming from that subscale of the EDI, the factor was given that label. Item 3 is consistent with that interpretation but item 25 would have been expected to load on factors 2 or on factor 7 with item 24. Item 26 was expected to load similarly to item 64, as they both relate to sexuality, or as an alternative to load on factor 3, where it loaded in the factor analysis which included the male subjects. Factor 9 accounted for 2.4% of the variance.

Factor Score Correlations

Because the relationship between the selection criteria (FAC1, FAC2, OB-R and CHO) and the factors resulting from factor analysis of the EEQ are of interest, Table 3 provides a portion of the Pearson Correlations between the factor

scores and the selection criteria as well as between the factor scores and the answers to the survey questions of the EEQ.

The correlations confirm the interpretation of some of the factors. For example, the EEQ factor 1, dieting, has its highest correlation, .88, with FAC1, the dieting factor of the EAT-26, but it also correlates .36 with FAC2, the bulimia and food preoccupation factor of the EAT-26, and therefore has a high correlation with the EAT-26 total score as well. At .73 the correlation between EEQ factor 1 and the survey question on the frequency of dieting is much higher than its .55 with the question "Are you currently dieting?". Other positive correlations above .25 are the EEQ factor 1 correlations with the rating of body weight as under- or overweight, running, strenuous exercise, and exercise frequency, as well as, the three reported weights expressed as proportions of each person's average, that is, present weight, lowest adult weight, and highest adult weight. Of interest and also significant ($P < .05$) are the correlations of .11 with the question "Running 10 K" and .12 with the occurrence of "Other Exercise".

Similarly, EEQ factor 2, characterized as sweet-bingeing, has a .53 correlation with FAC2, the bulimia and food preoccupation factor of the EAT-26. The correlation of .34 with "oral control", FAC3, is its only negative correlation. The factor appears to be related to

dieting because the correlation with the question on current dieting is .22. There are smaller positive correlations with all three weight proportions, present weight, past low weight, and past high weight.

EEQ factor 3, labelled obligatory-running, has its highest correlation with the OB-R selection criterion, i.e. .74. Predictably, the survey questions on running and exercise provide correlations ranging from .23 to .45. The correlation with the EAT-26 is small, at .19, but it is significant, as is the .17 correlation with FAC1. This suggests a relationship between obligatory-running and the total scores on the EAT-26 as well as its dieting factor.

EEQ factors 4 and 5 have few correlations. The purging factor, EEQ factor 4, has significant correlations with FAC2 at .38, with FAC3 at .18, and with the total scores of the EAT-26 at .27. Factor 5 has no high correlations. Whereas none of the variables are purported to be directly related to interoceptive awareness, a small correlation with EEQ Factor 2 was anticipated.

The highest correlation with the EEQ factor 6, thinness, is FAC3, the oral control factor of the EAT-26, at .49, although the total score of the EAT-26 has a correlation of .29 with it. All the answers on weight, that is, the proportions of weight for current, lowest, and highest adult weight, as well as, the rating of body weight as under- or overweight, are all negatively correlated.

This is consistent with the interpretation of the factor because the larger the scores for these negatively correlated weight items, the more overweight the individual is or was.

The last three EEQ factors have few substantial correlations. Factor 7, interpreted as food-craving, correlates .28 with the CHO criterion items and negatively .17 with the "Frequency of Other Exercise" (P=.001). Unlike the Factor 2, "Sweet Bingeing", positive correlation with the reported weights, Factor 7 correlated negatively .12 with the proportion subjects reported being overweight (P=.009), and negatively .11 with the proportion currently overweight (P=.01). Thus, this factor appears to reflect the food craving of thinner subjects. Factor 8, interpreted as daily-fasting, has a .22 correlation with the rating of body weight as under- or overweight. In contrast to Factor 7, it correlates positively with all three weight proportions, present weight at .16, past low weight at .13, and past high weight at .15. Evidently, daily fasting correlates with being over- rather than under-weight and with rating oneself as being overweight. Factor 9, perfectionism, has a .31 correlation with the OB-R selection criterion and a .28 correlation with FAC3, the oral control factor of the EAT-26.

EAT-26: High and Low Scoring Groups

Table 4 shows the results of dividing the 613 subjects

by the EAT-26 criterion score of 20 suggested by Garner et al. (1982). As mentioned above, the cutoff score was not expected to be appropriate for a university population. However, it is informative to examine, in Table 4, the differences evident between those who score 20 or above and those who score less than 20. Gender differences led to the separate consideration of males and females. These differences were most evident in the numbers of subjects in the high and low groups of males and females. As noted above, only 8 of 214 males scored above 20 on the EAT-26. Of the 105 females scoring 20, 60% scored from 20 to 28, 31% scored from 29 to 40 and 9% from 41 to 55.

The first column under both males and females provides the means and standard deviations for all males and all females in the study for each of the subscales and the survey questions on the EEQ. The subsequent columns for each gender show these statistics for those members who scored below and above the criteria score of 20. In some instances relative frequency distributions are reported for the variable. Using each mean score as the dependent variable, 2 X 2 ANOVAs were done to assess the significance of dividing the population by gender into high and low scoring groups. The levels of significance found for each measure are reported in the footnotes of Table 4.

High and Low Scoring Groups: EEQ Subscales

It is of interest that significant differences were

found in the scores on the OB-R and CHO subscales used for selecting interview subjects. The high scoring group was significantly different from the low scoring group ($P < .001$) on the OB-R criterion and the genders were significantly different at $< .05$. Thus, those who had high scores on the EAT-26 had higher scores on OB-R. Males in high and low scoring groups scored higher on OB-R than their female counterparts. Only group differences were significant for CHO ($P < .05$). Female high and low scoring groups evidenced a difference of 2.1 in their means; those who had high scores on the EAT-26 had high scores on CHO as well. The male means were similar on CHO.

As would be expected, the ANOVAs on total EAT-26 mean scores, and the EAT-26 subscale scores, indicated groups and genders were significantly different. As the high and low gender groups did not show parallel scoring patterns, the interaction was also significant. The EAT-26 means were: low males 9.9, high males 21.3, low females 11.0, and high females 28.7. Because of their importance in the symptomatology of anorexia nervosa and bulimia, the scores are reported on the four questions of the EEQ that relate to vomiting and laxative-use (see in Table 4, VOM, which includes both EEQ items 39 and 61, also Q. 61, "Vomit after I have eaten.", and LAX, which includes both EEQ items 33 and 41). Notably, the few high scoring males have means and standard deviations similar to the high scoring females.

Thus although the genders do not differ, the group differences were significant (for LAX P=.02, but VOM and Q. 61 were both significant at .001).

Differences were also found between high and low groups in the survey questions of the EEQ. These are best seen by examining the relative frequency distributions. For example on the question "Dieting Currently", although the mean values appear similar, (because of the yes/no answer) the distributions reveal why levels were significantly different. All males who answered yes to "Dieting Currently" totalled 6%, compared to the 31% of all females who answered yes. As well, only 18% of low scoring females reported current dieting in contrast to 67% of the high scoring females. For groups the level of the significance difference on this variable was $p < .01$, but for gender and the interaction it was $p < .001$. Similarly, the variable "Frequency of Dieting" was significant on all factors ($P < .001$). Here again the distributions indicate that the four groups, high and low scoring males and high and low scoring females were highly dissimlar. Unlike the results on the OB-R criterion, there were no significant differences on the variable "Strenuous Exercise Frequency". However, on the variable "Running 10 K", the genders differ ($P < .05$), with more males answering positively. No significant differences were found for the reporting of "Other Exercise" or the frequency of its occurence although the high scoring females

appear to report higher rates of other exercise than low scoring females (the interaction approached significance at $p < .07$).

High and Low Scoring Groups: EEQ Weight Questions

The weights and heights reported on the EEQ were compared with standards and are reported as percentages of standards (Metropolitan Life, 1983). Reports on the highest and lowest weights since achieving current adult height are also expressed as percentages of standard weights. It should be noted that the percentages listed for those >30% underweight, >25% underweight etc. are cumulative percentages so that, for example, in the weights for high scoring females, the 5 C% (C% for cumulative percent) who were >20% underweight includes the 1% who were >25% underweight. In this instance there was 1% in the >30% underweight category. This means that adding the category >25% underweight did not add any new cases. Thus looking at any category gives, without summing other categories, the total percent who fit that description.

Because the EAT-26 is a measure of anorexic behaviors and attitudes and because anorexia nervosa is associated with notable weight losses, it might be expected that differences would be found between high and low scoring groups in their current weights. However, no significant differences were found in the means. Because the figures represent percentages of normal weight this cannot be

because of sexual disparity. The gender effect approached significance at .10. Weights of females appear to be more below normal than weights of males. The mean of the high scoring females was unexpectably only half that of the low scoring females and 23% of the low scoring females were at least 15% underweight. In contrast only 15% of the high scoring females were 15% underweight. Like the low scoring females, 25% of the high scoring males were at least 15% underweight. The variable "Rating of Current Weight" (at average, or over- or underweight on a scale of 5) showed a significant gender effect ($P < .001$) and some interesting contrasts between the genders. The males were more prone to rate themselves accurately as underweight (25% of high scoring males actually were at least 15% underweight but 24% of low scoring males rated themselves underweight when only 10% of them were as much as 15% underweight). In contrast, in the high scoring females there were 15% underweight yet only 4% rated themselves so. In fact 63% rated themselves as being overweight when in fact 10% actually were 15% overweight. Like the females, 38% (3 of 8) of the high scoring males said they were overweight when none were as much as 15% overweight.

If current weights were not significantly different between the high and low scoring groups, then it might be expected that at some time in the past the weights for the high scorers might have been very low. However, in the

question dealing with lowest weight achieved since reaching present height, only the interaction was significant ($P < .05$). The high scoring males have been underweight to more extreme degrees than any other group (it is to be remembered they numbered only 8). Gender differences approached significance at .08. A surprisingly high percentage of all females, 48%, reported they have been at least 15% underweight. Again, more low scoring females have been at lower weights than the high scoring group with 29% having been 20% underweight and 8% having been 25% underweight. The latter percentage reaches the weight loss criteria of the more stringent diagnostic criteria for anorexia nervosa.

High and Low Scoring Groups: Selection Criteria

The last four items in Table 4 are the designations for the interview selection criteria: ANR (like-restrictive-anorexics), ANB (like-bulimics), CCHO (carbohydrate-cravers), and OB-R (obligatory-runners). The numbers following each designation indicate the total number who would meet the criterion, i.e. of the high scoring females 23 (i.e. 22%) met the ANR criteria, 19 (18%) met the ANB criteria, 36 (34%) the CHO criteria, and 26 (25%) the OB-R criteria. Those who did not meet any of the criteria numbered 37 (35%). Although more (42) of the low scoring females met the CHO criteria, they represented only 14% and the 12 low scoring females who met the OB-R criteria formed only 4% of the 294. Thus 82% of these low scorers met none

of the interview selection criteria. In the males however approximately the same percentages of CCHO and OB-R were noted in the low and high scoring groups. It should be noted that the percentages of the high scoring females do not sum to 100. This occurs because a number of these individuals met more than one selection criteria. In fact, only 19 of the 38 who met the OB-R criteria were high only on that. Some were high on both OB-R and CHO, and 18 met those two criteria plus ANR or ANB. The ANR and ANB criteria are mutually exclusive. Of the males only 5 were high on both OB-R and CHO (none meeting the stringent criteria of ANR or ANB) and of these only two scored above 20 on EAT-26.

Analysis of the Interview Data

The primary measure used in the interviews was the Eating Disorder Inventory (EDI) because the authors claim it discriminates between those with serious psychopathology and "normal" dieters. It was given to interview subjects for that purpose. The EDI is purported to have 8 dimensions which were deductively derived and then empirically validated (Garner et al., 1983a,b). For anorexic-like subjects, scores on some subscales were expected not to differ significantly from the scores of anorexia nervosa patients in the previous studies using the EDI. On these subscales anorexic-like subjects were expected to differ significantly from the low-scoring females and the males.

The subscales expected to differentiate between those with and without anorexic qualities were: Drive for Thinness, Bulemia, Body Dissatisfaction, and Maturity Fears. On one other subscale, Ineffectiveness, anorexic-like females, anorexia nervosa patients, and female students have differed significantly from each other (Garner, Olmsted & Garfinkel, 1983).

EDI Factor Analysis

Although subjects numbered only 120, the EDI was subjected to principal components analysis to determine whether it is a multidimensional measure. Initially, 14 factors were identified with eigenvalues greater than unity (these accounted for 74.6% of the variance). In the factor solution rotated to the varimax criterion, the last 6 factors had only 0-2 statements that loaded purely at .45 or greater. Although 1 or 2 other statements loaded at the .45 level on these later factors, they also loaded on other factors, making these last 6 factors difficult to interpret and very specific in nature. Three reasons led to the examination of 8 factors in the final factor analysis. One, the EDI is purported to have 8 dimensions. Two, the initial 8 factors accounted for 62.2% of the variance and, three, the first 8 factors all had eigenvalues greater than or equal to 1.6. Gender and the selection criteria embedded within the 64 EEQ statements (FAC1, FAC2, OB-R and CHO) were included in the factor analysis to help interpret the

factors. Their loadings appear as part of Table 5 which gives the items, their loadings, the eigenvalue for each factor, and the percentage of variance for which it accounts. Pure item loadings from .45-.75 (positive or negative with no other loadings of the same sign above .30) as well as the very high loadings are flagged. If an EDI subscale name (Garner et al., 1983a) was considered appropriate it was used to label the factor and is noted at the head of each column.

The first factor was interpreted as "Dieting". But factor 1 also had a component of lower body dissatisfaction, evidenced by four of the nine statements with loadings above .75 (i.e. 9, 45, 59, & 62, the statements on dieting being 7, 11, 16, 32, & 49). The three statements loading between .45 and .74, 1, 12, and 25, were similar to those with high loadings. There were a large number of statements with multiple loadings that loaded on factor 1 as well (2, 4, 19, 28, 31, 38, 40, 46, 47, 53, 55, 61, & 64). Many of these statements related to bingeing. Many loadings are negative but the negatively signed loadings are consistent with the interpretation, because the statements were worded in an opposite manner to the positively loading items, thus obtaining a "never" rather than "always" response. Predictably FAC1, the "dieting" selection criterion, loaded very high on factor 1. A female bias toward dieting is reflected by the fact that only on factor 1 did gender load

with any strength. CHO had a very small loading of .10 and OB-R was just a little higher at .16, neither showing much correlation with this factor.

Ineffectiveness was an appropriate label for factor 2. Only the statement "I have a low opinion of myself." had a high loading but four similar statements had loadings between .45 and .74 (24, 27, 42, & 50). A large number of statements that loaded on several factors had a loading on factor 2 as well. Some were expected to have better loading on this factor, such as statements 10, 18, and 20, which have the highest of their multiple loadings here. Both 37 and 56, expected to load on factor 2, have two loadings elsewhere. Other statements (19, 30, 31, 33, & 35) not expected to load on factor 2 had small loadings here and larger loadings elsewhere. Of the selection criteria, only FAC2 (bulimia and food preoccupation) had even a small loading. Both FAC1, the dieting selection criterion, and OB-R, the obligatory-running criterion, had loadings near 0, indicating the minimal correlation with this factor.

The third factor, characterized as "Perfectionism", had two loadings higher than .75 (statements 13 & 36) and four between .45 and .74. All were consistent with the interpretation and were expected to load together. Only one of the statements with multiple loadings was seen under factor 3 (18. I feel alone in the world.). Interestingly, OB-R, the selection criteria for "obligatory running", at

.62 loaded highest on factor 3, confirming a relationship between this perfectionism factor and attitudes described by OB-R.

CHO, the "carbohydrate-craving" selection criterion, loaded .57 on factor 4 which had no pure loadings other than CHO. Factor 4 shared its loadings of .45-.75 with factors 1, 2 and 5. It was labelled "Bingeing" based on the bingeing content of the statements that had their highest multiple loadings here (5, 28, 38, 44, & 46). FAC2, the bulimia selection criterion loaded on factors 4 (.50), 1 (.43), 8 (.42), and had a low loading (.31) on factor 2.

Factor 5 had three statements, 21, 26, & 51, with loadings sufficiently high to interpret it as "Interoceptive Awareness". Item 8 also had a low, but pure, loading. Other statements expected to load on this factor were 33, 40, 44, 47, 60, & 64. These had multiple loadings. Both 33 and 60 had their highest loading on factor 5 but 40 and 64 had only small loadings here and statement 44 ("I worry that my feelings will get out of control.") and 47 ("I feel bloated after eating a small meal.") did not load on factor 5 at all. Other statements with multiple loadings (4, 5, 55 & 56) had small loadings here.

The sixth factor, which was characterized as "Interpersonal Distrust", had six statements with pure loadings. Those higher than .75 were 15 and 57. Loadings between .45 and .74 were 17, 23, 34, and 54. Statement 30

was expected to load with these. However, whereas 30 has its highest loading on factor 7, it loads on factor 2 as well. Two of the other statements which load on several factors also load here (20 & 60).

Factor 7, which was interpreted as "Maturity Fears", had seven statements with loadings between .45 and .74, 3, 6, 14, 22, 39, 48, & 58. Number 30 had a medium loading but loaded on factor 2 as well. It was the only other statement expected to load with these seven.

Factor 8 might have been dropped from the analysis because it had no high or medium loadings but it had two low loadings (statements 12 & 19) opposite in sign to loadings on other factors. Both statements indicated satisfaction with body shape and both loaded negatively on factor 1. Factor 8 was labelled "Other Problems" because it appeared to represent an antithesis to the dieting factor, however, statements with with multiple loadings that loaded here suggested some disturbance. These were: 47. I feel bloated after eating a small meal.; 53. I have the thought of trying to vomit in order to lose weight.; and 56. I feel empty inside (emotionally).

Interview Subjects Responses on Questionnaires

Table 6 provides the responses of interview subjects on questions asked during the interviews. Responses are reported by groups, that is under the columns headed by the designations for those with high CHO scores, high OB-R

scores, etc., the group mean response is listed for a particular variable. Where appropriate, relative frequency distributions are given. At the end of Table 6, responses on the survey questions and the subscales of the EEQ are listed in order to provide more complete profiles of the groups. Many questions were asked on interviews that are not reported in Table 6. Generally, if neither the ANOVAs for the mixed-gender groups or the 5 female groups resulted in significant differences, then variables were omitted from the Table. For example, no differences were found across groups on body temperature or pulse rate, therefore, they are not reported. However, a few exceptions were made.

Statistical Procedures for Interview Responses

To determine whether the differences in the group means were significant ANOVAs were used. Neither the transformation of the scales to use interval statistics or the nonnormality of the response distribution is a statistically serious violation of the ANOVA assumptions (Wilson, 1982). For the 5 female groups one-way ANOVAs were done using each variable as the dependent variable. To compare the 3 groups for which males and females were available (i.e. groups selected with the CHO, OB-R, and control or "normal" criteria) 3 X 2 (3 groups X 2 genders) ANOVAS were done, again using each variable as the dependent variable. Scores on which the group means were not significantly different (using the criterion of greater than

or equal to .05 with Newman-Keuls test) are identified with the same superscripts in Table 6. A Maximum Likelihood Chi Square test of independence was done on the nominal variable, "Diet Rules". All body weights listed are proportionate, that is the subject's weight, as measured on a health scale, was taken as a proportion of the average weight for a person of that sex and height. For current weight (Scale Weight Prop.) the percentage of the group within 10% of normal weight is listed as well as the cummulative percentage of those at each level of underweight or overweight.

Table 6 is really two subtables combined to permit inferential comparisons between two subgroups of interview subjects that cannot be statistically compared. The three male groups are compared to the first three female groups, forming a subtable. The same three female groups are part of a subtable comparing the five female groups. Statistical comparisons are made by scanning for symbols and for superscript letters behind the means. For example on EDI subscale 1, in the first row, the identical symbol in the first four cells indicates that the means (0.3, 1.9, 1.1 and 1.1) are not significantly different from each other. However, the second cell has a plus symbol and the sixth cell mean also bears that symbol. This indicates a second group of means (1.9 and 5.6) not significantly different from each other. The means in the fifth and sixth cells in

this row have the minus symbol indicating the means (8.7 and 5.6) form a third group, not different from each other. When the female subtable is examined only the superscript numbers are considered. For example, in the five female groups, the means of 5.6 and 8.7 were not significantly different, nor were those of 8.7, 12.9 and 13.1, therefore in this instance only 8.7 has two superscript numbers. The mean of 1.1 was significantly different from all other female groups, therefore it bears a unique superscript number.

EDI Results

In Table 6, the EDI mean scores do not represent factor scores. Instead scores were obtained on each of the subscales purported, by the authors of the EDI, to measure a particular psychological component of anorexia nervosa. Exempting the ANR and ANB groups from analysis, male and female groups had quite similar scores on all of the EDI subscales with the exception of Drive for Thinness and Body Dissatisfaction. Only on these did normal male and female groups differ. Male and Female carbohydrate-craving (CHO) groups similarly differed on these two subscales. The male and female OB-R groups differed not only on Drive for Thinness and Body Dissatisfaction, but also on the Bulimia subscale. On Body Dissatisfaction OB-R and CHO females had much higher scores than the normal females and all the male groups. On the Perfectionism subscale the OB-R males had

the highest score across all groups with the female OB-R merely a fraction lower. The male OB-R group differed significantly from normal males on Interpersonal Distrust as well as the Perfectionism subscale. Whereas the male OB-R group differed on various subscales from the others, as noted, the male CHO group did not differ significantly from the normal male group on any of the subscales.

Within the context of the Newman-Keuls comparison on the female groups, scores on the first EDI subscale, entitled Drive for Thinness, were much higher for groups with higher proportions of dieters (c.f. the variables, Dieting at Survey, Dieting at Interview). The OB-R, ANR (like Anorexic Restrictives) and ANB (like Anorexic Bulimics) groups, formed one cluster of similar means. However, the OB-R group, with fewer dieters than the ANR and ANB groups, was also similar to the CHO group, with even fewer dieters. All were significantly different from the normal females. The female CHO group differed significantly from the normal female group on Interoceptive Awareness as well as the first subscale. The female OB-R group differed significantly from normal females on the first subscale, on Body Dissatisfaction, Perfectionism, and Introceptive Awareness. On Ineffectiveness, and Interpersonal Trust, the five female groups show no distinctive differences. On the Bulimia subscale, the ANB group was significantly higher than all other female groups. As well, both ANR and ANB

groups differ significantly from the normal group on Body Dissatisfaction, Perfectionism, and Interoceptive Awareness.

Because the EDI was expected to differentiate between individuals who were "normal dieters" and those who were anorexic-like, subscale scores were examined on an individual basis. The EDI's authors suggest for each subscale that the 50th percentile scores of Anorexia Nervosa patients be used as the criterion for assessing anorexic-like qualities. These mean scores vary somewhat in the three reports on the EDI (c.f. Garner, Olmsted, & Polivy, 1983a,b; Garner, Olmsted, & Garfinkel, 1983) and there is some ambiguity about the criteria scores for both the Bulimia and Body Dissatisfaction subscales because restrictive and bulimic patients scores are remarkably different. It was determined for this study to use as criterion scores for each subscale the following: 15 for Drive for Thinness, 11 for Bulimia, 17 for Body Dissatisfaction, 14 for Ineffectiveness, 10 for Perfectionism, 7 for Interpersonal Distrust, 13 for Interoceptive Awareness, and 6 for Maturity Fears. With these criteria only five individuals in normal groups had anorexic scores on any of the eight subscales. As would be expected from group means in Table 6, high scores on Perfectionism characterised both male and female OB-R groups (12 of the 30 scored above the criterion). However, only six in each of the ANR and ANB groups had scores above the

criterion on Drive for Thinness, whereas four in the female OB-R met the criterion, and two in the female CHO group. Only six females had scores equivalent to the mean scores of anorexic patients on four or more subscales, although scores on one or two other subscales were within a point or two of the criteria. Of the individuals identified by the EDI as being anorexic-like, all but one met the *DSM III* criteria for bulimia. Brief notes on these six follow.

One female in the OB-R group had high scores on 6 subscales. She was a vomiter scoring 26 on the EAT-26, 20 on the CRS, 14 on CHO (with 14 on the OB-R selection criterion) and her weight was within 5% of normal. She was Chinese born but had lived in Western Canada for a number of years. One female in the CHO group met the criterion scores on four subscales but was just under on two other subscales. On the EAT-26 she scored 28, on the CRS, 23, on OB-R, 6, (on the CHO selection criterion, 21) and her weight was 9% below normal. One female in the ANR group had the scores of anorexic patients on four subscales. She had a high 13 on the subscale for Maturity Fears, scored 31 on the EAT-26, 26 on CRS, 12 on CHO and 8 on OB-R. Her weight was 4% below normal but had been 18% below. Three in the ANB group met the criterion scores on five to six subscales. Of the two who were vomiters, one was currently 91% overweight, but had been 14% underweight. She scored 55 on the EAT-26, 27 on CRS, 11 on CHO and 10 on OB-R. The other was currently at

normal but had been 14% underweight. She scored 51 on the EAT-26, 31 on CRS, 8 on CHO and 23 on OB-R. The remaining female had the scores of anorexic patients on five subscales including a score of 14 on the Bulimia subscale, yet the binges she described did not meet *DSM III* criteria in quality or quantity. She was 36% overweight and her lowest weight was 9% overweight. Her score on the EAT-26 was 32, on CRS only 9, on CHO, 21, and on OB-R, 3. The Interviewer's Rating of Anorexic-like behaviors had indicated she was normal.

With the exception of the latter individual, the EDI would appear to be identifying pathologically disturbed attitudes. However, the EDI did not identify even one of the medically diagnosed anorexics, thus the Positive Predictive Value was indeterminate. Of the 21 individuals who met the *DSM III* criteria for bulimia, only 5 were identified. Of the 27 individuals coded as practicing purging or fasting along with restrictive dieting, three were identified by the EDI. Thus, EDI scores did not agree well with other predictive measures used to assess the behaviors and attitudes associated with eating disorders. When judged against these other criteria, the positive predictive value of the EDI was little better than chance. Specicifity and sensitivity were consistently at opposite ends of the range; if one was 11% the other was over 80%.

EDI Subscale Correlations

To determine the relevance of the EDI subscales to other measures, Pearson correlations were done for a number of variables and subjects' scores on the EDI subscale items (not EDI factor scores). Although correlations above .20 were significant (P=.01) those under .30 are not reported here.

The EDI Subscale termed Drive for Thinness had correlations greater than .75 with the EAT-26 total score, that measure's dieting subscale, FAC1, as well as Current Dieting and Dieting Frequency but correlations were significant with scores on the two selection criteria CHO and OB-R, with Vomiting, Laxative Use, Rating of Weight, Scale Weight (Proportion of normal), Highest Weight (Proportion of normal), the EAT-26's bulimia subscale, FAC2, and Interviewer's Rating of Anorexic-like behaviors (correlation for the latter was .58). A negative correlation of .30 occurred with Ideal Weight (Proportion of normal).

The subscale concerning Interoceptive Awareness had correlations of .58 and .47, respectively with FAC2 and CHO and correlations above .30 with EAT-26, FAC1, Vomiting, Current Dieting, Diet Frequency, and Interviewer's Rating of Anorexic-like behaviors.

The EDI subscale related to bulimia had a .74 correlation with the bulimia subscale of the EAT-26, FAC2,

and correlations above .50 with EAT-26 total score, and Vomiting. Correlations above .35 occurred with FAC1, Laxative Use, CHO, Current Dieting, Dieting Frequency, Highest Weight (as a proportion of normal), and Interviewer's Rating of Anorexic-like behaviors.

The subscale entitled Body Dissatisfaction had correlations of .62 and .63, respectively, with Current Dieting and Dieting Frequency but correlations above .50 with Rating of Weight, EAT-26, and the EAT-26 dieting subscale FAC1. Correlations above .30 occurred with the EAT-26 bulimia subscale FAC2, Laxative Use, Scale Weight (as a proportion of normal), Highest Weight (as a proportion of normal), and Interviewer's Rating of Anorexic-like behaviors.

The subscale concerned with Perfectionism had its highest correlation with OB-R (.56). Correlations above .30 occurred with EAT-26, FAC1, and Current Dieting.

The other subscales had fewer and lower correlations with these variables. The subscale regarding Ineffectiveness had correlations above .30 with EAT-26, FAC2, Vomiting, Laxative Use, CHO, and Interviewer's Rating of Anorexic-like behaviors. The highest correlation for the subscale Maturity Fears was (negative) .28 with the Frequency of Other Exercise. The subscale entitled Interpersonal Distrust had its highest correlation with CHO at .24 (P=.004).

Interviewer's Ratings

The interviewer's rating of anorexic-like behavior indicates the differences between the groups. Both male and female CHO groups have 3 individuals, of 15, who are restrictive in their eating patterns. The coding "Restrictive" designated an individual who perennially diets but, except for the duration the diet, is not unusually severe, that is the diet itself is within normal parameters. One in the male CHO group indicated in the interview that he occasionally vomits after eating food he dislikes and frequently uses herbal laxatives (he attributed these behaviors to being raised in the Orient). The female OB-R group had 6 individuals of 15 who reported using laxatives, diuretics, or vomiting for weight control. Two of these women did not have EAT-26 scores over 20; one scored 19, one 6. The latter, because of her responses during the interview, was presumed to have falsified her answers on the EAT-26. Fully 40% (6 individuals) of the ANR group and 33% (5 individuals, error in percentage is due to rounding) of the ANB group were considered to be on normal diets although their EAT-26 scores were 29 or greater. Thus a false positive rate of 22% occurred with using 29 as the effective cutoff score. However, the balance in both groups were considered anorexic-like in their behaviors and attitudes. One of the ANR group and 3 in the ANB group reported that they had been advised by medical professionals that they had

anorexia nervosa or bulimia.

There is close agreement between the subjects' rating of whether they were binge-eaters (Self Rating Binger) and the interviewer's rating of whether the subjects' binges would meet the *DSM III* definition of a binge (Interviewer Rating Binger). Just one individual in each of the female groups, CHO and ANB, described binges that would not meet the criterion.

The interviewer's rating of depression, based on verbally reported symptoms and behaviors during the interview coded more of the female CHO group and ANB as presenting evidence of depression. One male in the normal group had recently experienced the death of a friend and thus was coded depressed.

The variable "Diet Rules" was interviewer rated as well. During interviews subjects reported the rules they used for dieting and were subsequently questioned further. The results were coded according to whether there was no diet, a usual form of dieting (which included ethnic diets, diabetic diets, and weight lifters' protein diets), or whether the subjects had their "own diet" (which included fasting, vomiting, or the use of laxatives or diuretics). Orthogonal contrasts with maximum likelihood chi squares on the levels of dieting by groups indicated the following: Thus, the ANR, ANB, and female OB-R groups were the major sources of variance. By inference (and a post hoc contrast

Contrast	*G-Square*	*df*	*Significance*
ANR+ANB/all others	32.75	2	<.0001
Female OB-R/all others but ANR+ANB	21.46	2	<.0001
Females(Normal+CHO)/ All male groups	4.38	2	.112
ANR/ANB	3.91	2	.142
Female CHO/Female NORMAL	.93	2	.628
Male CHO/Male OB-R/ Male NORMAL	13.42	4	.009
TOTAL G-Square	76.86	14	<.0001

that found no difference; G-Square=0.25, 2 df, P=.88) the OB-R females were similar to the ANR and ANB females. The normal and CHO female groups were not significantly different from each other nor did they differ from male groups. The significance of the residual contrast of all three male groups indicated the male groups contributed to the variance (the male OB-R group contained 3 individuals who usually ate only once a day). A post hoc contrast of normal males with all other males was significant (G-Square=8.93, 2df, P=.01), but a contrast of male OB-R and male CHO was not significant (G-Square=4.49, 2df, P=.11). The proportions of groups following the three levels of dieting are reported in Table 6.

CRS Differences

Although the differences between groups on the total mean scores on the Carroll Rating Scale, appear

considerable, they are not significantly different. However, individual scores vary widely and a high proportion of the interview population indicates depression. The total possible score on the CRS is 52 and the suggested cutoff score is 10, based on its validation on university employees and patients diagnosed as having endogenous depression. The mean for the employees was 4.6 (standard error=0.4, median=3; Carroll et al., 1981). The mean in the interview population was 10.4 (standard error=0.64, median=8.3) with 44% scoring above the cutoff of 10. Several reasons are evident for adjusting the cutoff score of the CRS upward in the same manner that the cutoff for the EAT-26 was adjusted. First, the interquartile range indicates that 50% of those interviewed had scores between 5.0 and 14.25. Second, Carroll et al. have noted that the "undiagnosed" individuals tested with the CRS rate themselves worse than those with endogenous depression. Third, the Interviewer's Rating of Depression does not agree well with CRS scores. Thus, even though high rates of depression were expected a cutoff of 14 might be more appropriate. To contrast the conclusions reached if 14 is used as a cutoff rather than 10, the numbers rated depressed using 10 are in parentheses following the numbers obtained using 14: normal males, 1 (4); OB-R males, 1 (5), CHO males, 7 (10); normal females, 1 (1); OB-R females, 6 (8); CHO females, 8 (10); ANR, 4 (8); and ANB, 5 (7). The number

in each group was 15. Subjects scoring above 14 composed 27.5% of the 120 interviewed.

High proportions of those selected on the basis of the carbohydrate-craving criteria obtained high scores on the CRS and other interview groups with carbohdrate-cravers such as the ANR and ANB groups had more individuals with high CRS scores, however, a high score in one did not predict a high score in the other. The highest correlations with the CRS for the 75 females interviewed were: Interviewer's Rating of Depression, .31 (P=.003); vomiting after bingeing, .40 (P=.001); number of times per week breakfast is eaten, -.38 (P=.000); FAC2 of the EAT-26, .34 (P=.002); with the EEQ items on laxative-use, .33 (P=.002); urges to binge, .32 (P=.003); self-rating as binger, .36 (P=.001); maximum weight gained in a month, .34 (P=.001); and fear of not being able to stop bingeing, .34 (P=.001). Correlations with a number of other variables such as using diet pills, current dieting, the OB-R selection criteria, and weight fluctuation were from .22 to .24 and also significant.

Other Variables: Gender Differences

On some variables listed in Table 6 there were evident differences between genders. The most consistent differences were on dieting related items and body weights. For example, males seldom report dieting although during interviews a number of males reported they were conscious of

body shape and were on high protien diets, consuming protien supplements daily. On the number of "Times Breakfast Is Eaten Per Week", all males reported eating significantly fewer breakfasts than the females. With the exception of the one Oriental male (several other Asians males were interviewed) no males reported vomiting, laxative, diet pill, or diuretic use.

In reviewing the weight related items, females were more variable in weight. Mean current weights (Scale Weight, Proportion) for males were within 2 pounds of normal weight, whereas, the females mean ranged plus or minus 6 pounds of the norm. The proportion of underweight persons varies across groups. Twenty percent of females in the normal group were 20% underweight but only 7% of the CHO and ANB female groups were underweight. None of the ANR group were underweight. Only the male CHO group showed underweight percentages similar to the females: 13% were 25% under normal weight. The reported lowest weights since achieving present heights were significantly lower for the CHO, OB-R and the normal females when compared to the male halves of their groups. Highest weights were also significantly different between genders. This is not due to sexual disparity because weights are expressed as proportions of normal weight. Expressing weights as proportions means, therefore, positive values on these variables indicate overweight, negative values indicate

underweight. The female ANB group reported more overweight individuals although the male CHO group had higher percentages of formerly overweight individuals than the other groups.

Further, weight related differences were seen on the variable Ideal Weight. The females wanted to be 7.7 to more than 10 pounds less than the normal weight for their height while the males would like to be from 2 pounds under normal to 2 pounds over. Consistent with popular beliefs, females reported their weight incorrectly while males did not (c.f. Measured Weight as % of Reported Weight). The reporting error varied from a mean 3 pounds for normal females to a mean 6.4 pounds for ANR but this was derived from 1-3 members of each of these groups reporting weights from 10-57 pounds lighter than weights measured during the interview.

In the mixed-gender ANOVAS there were a number of variables for which the female OB-R group was significantly different from each of the others in the analysis. These include: Binge Urges, Intend to Vomit for Weight Loss, and Vomiting Frequency.

Differences Between Female Groups

In the portion of the table with the female groups, the groups appear to be graded, on some variables, from low to high as the groups are scanned from the normal group to the two anorexic-like groups. This is more evident in the

relative frequencies than the means. The gradation occurs on the following variables: Interviewer Rated Anorexic-like, Psychiatric Past Patient, Vomiting Frequency, Laxative Frequency, Diet Pill Frequency, Diet Frequency, Diet Rules, Strenuous Exercise, Other Exercise Frequency, Missed Menses History, Missed Menses Frequency, as well as, the bingeing questions asked during the interview and the EDI subscale 1, Drive for Thinness. With respect to weights, although the relative frequency distributions appear dissimilar, only on the variable Highest Weight (since achieving present height) were there any significant differences among female groups. The anorexic-like groups, ANR and ANB, reported significantly higher past weights that other groups. A Chi Square test of independence indicated the variable Missed Menstruation Frequency is significantly different across the female groups (Chi Square=40.08, df=3, P=.000). The difference on Missed Menstruation approached significance (i.e. $p<.08$). The ANR, ANB, and female OB-R groups all had several individuals who reported missing menses several times.

Differences Between Anorexic-like Groups

The two anorexic-like groups ANR and ANB were significantly different from other females only on the variable as Diet Frequency and Interviewer Rated Anorexic-like. Of course the EAT-26 total score and FAC1 were significantly different because these groups were

selected to be different on these variables. The ANB group was also selected to be much higher that the ANR group on FAC2 and so the significant difference between them was expected. ANR and ANB were also significantly different on FAC3 and EDI subscale 3, but these differences were expected because FAC3 is the Oral Control factor from the Garner et al. (1982) factor analysis and the EDI subscale deals with bulimia.

Other significant differences between ANR and ANB groups were mean scores on the variable Interviewer Rated Depression, Self-rating as Binger, Binge Urges, Intend to Vomit for Weight Loss and reported Vomiting Frequency, as well as, the CHO subscale and the items of the EEQ relating to vomiting and laxative-use (see Purge & EEQ Q. in Table 6).

The ANR and ANB groups were both highly similar to the female OB-R group on exercise rates such as Sports Hours per Week. Sports Intensity was coded on a scale of 1-5 with 1 equivalent to extreme levels such as membership on an inter-collegiate hockey or basketball team and 5 being no extra physical activities. The ANR and ANB groups were found to be involved in a variety of high-energy-consuming activities. Whereas, the OB-R females stood out as the only "vomiters" in the mixed-gender analyses, their similarity to ANR and ANB on vomiting related interview measures is evident in contrasting the female group responses for the

variable Vomiting Frequency. Only in the female OB-R, ANR and ANB groups was the response different from "never". Of the ANB, 60% (9 individuals) reported vomiting and 14% (2 individuals) of those do so one or more times a day. OB-R and ANR groups do have 20% (4 individuals) who reported vomiting for weight loss. The OB-R individuals all indicate this is rarely done, however. Seven percent (1 individual) of the ANR reported vomiting frequently every week while 13% reported 1-3 times a month. Notably, there was no indication from the EEQ measures on vomiting and laxative use (Purge, & EEQ Q.) that the OB-R females would include some vomiters. There is a further discrepancy for the female OB-R group in their answers on "Intend to Vomit for Weight Loss" and "Vomiting Frequency" as one subject reported the vomiting "just happens" without intent.

DISCUSSION

Because it is necessary to establish whether the instruments used in the study have identified individuals who are truly anorexic- or bulimic-like, it is necessary to consider at some length the efficacy of the EAT-26. Only if anorexic- or bulimic-like behaviors and attitudes occur as a variable in the study can it be argued that a relationship has been demonstrated between such behaviors and attitudes and the variables "obligatory-running" and "carbohydrate-craving".

However, first the research hypotheses will be addressed. It was expected that the majority of females scoring in the top 10% of the EAT-26 scores would be anorexic-like. Of the 42 females in the top 10%, 30 were interviewed. Of those, 19 or 63% were considered anorexic-like, thus this hypothesis was born out. Of the 19, 8 or 42% of them were analogous to restrictive-like anorexics and the rest were analogous to bulemic-like anorexics, thus the proportion was not 50:50 but 40:60. Further, it was expected that those with extreme scores on the EAT-26 subscales for Dieting (FAC1) would have high scores on "obligatory-running" (OB-R). Of the 30 females in the ANR and ANB interview groups who represented those with the highest FAC1 scores, 13 met the OB-R criterion. Of the 15 selected for interviews on the basis of their high OB-R scores, 8 had high scores on FAC1,

none had high scores FAC2, 9 had scores over 20 on the EAT-26. Thus the hypothesis was accurate for approximately half of the females. Of the males, selected for interviews on the basis of their high scores on the OB-R criterion, 4 had relatively high scores on FAC1 (2 had relatively high scores on the EAT-26) indicating a weaker relationship for males between the anorexic-behaviors and obligatory-running. It was also hypothesized that those with high scores on the Bulimia and Food Preoccupation subscale (FAC2) of the EAT-26 would have high scores on the carbohydrate-craving subscale (CHO). Of those in the ANB interview group, who had the highest scores on FAC2, two-thirds also met the CHO selection criterion. Of the females selected for their high scores on the CHO criterion, 2 had high scores on FAC2. Similarly, 2 males selected for their high scores on the CHO criterion had high scores on FAC2. Thus, whereas most bulimic-like females are carbohydrate-cravers, most carbohydrate-cravers are not bulimic-like.

The EAT-26 did not find male bulimics although research by Halmi et al. (1981) and Hawkins & Clement (1980) suggest college populations do have a proportion of male bulimics. Thus the EAT-26 and the EDI scales do not seem to be appropriate measures for males.

The hypothesis regarding depression, was that the highest scores on the depression measure (CRS) would be those with high scores on the CHO

criterion and on the Bulimia and Food Preoccupation subscale (FAC2) of the EAT-26. Further, the next highest scores were expected to be the females with high EAT-26 scores, then the males and females with high scores on the OB-R criterion. Those with the lowest scores on the depression scale were expected to be those in the normal interview groups. The interview groups with the highest proportion of scores above the depressive criterion score were in the male and female groups chosen for their carbohydrate-craving. The interview groups with the lowest scores on the depression scale were the normal groups. However, the ANB group with high scores on the Bulimia and Food Preoccupation subscale had approximately the same number of individuals with high scores on the depression measure as the females in the ANR and OB-R groups.

The hypothesis concerning the EDI was that females with high EAT-26 scores or OB-R scores would have scores within the range of anorexia nervosa patients on the EDI subscales. This hypothesis was not borne out; the EDI scores did not correlate well with other predictive criteria.

Generally then, there is support for an association between anorexic behaviors and both obligatory-running and carboydrate-craving. The former relationship is evident in the correlations between EEQ Factors 1 and the several survey questions quantifying exercise behaviors. That is, the correlations of .32, .12, and .25 between individual

scores on Factor 1 (Dieting and Weight Concern) and, respectively, the variables "frequency of strenuous exercise", "the occurance of other exercise", and "frequency of other exercise", argue for a relationship. In a similar way, Factor 3 (Obligatory Running) correlates .19 with the EAT-26 total scores and .17 with the EAT-26 dieting subscale. The latter correlation has a probability of .001, the foregoing were all less. The female OB-R interview group had the only vomiters other than the ANR and ANB interview groups. In an analogous way the ANR and ANB groups were similar to the female OB-R group in exercise measures such as "sports hours per week". In general, those who had high scores on the EAT-26 had high scores on the OB-R criterion.

Notably, the OB-R females were not significantly different from the ANR and ANB females with respect to the variable Diet Rules. Judging from the maximum likelihood chi square analysis, the OB-R items evidently selected for high exercisers who engage in strange diets. This was true for males as well as females. This analysis validated the anorexic and bulemic scale items and established the similarity of the diets of the OB-R females to anorexic-like individuals.

Because statements concerning carbohydrates load on several EEQ factors carbohdrate-craving may be assumed to be a complex variable. Three factors which contained

carbohydrate items were the Factor 1, dieting, Factor 2, sweet-craving, and Factor 7, food-craving. Although the word "carbohydrate" evidently requires explanation to many subjects (along with words such as purgatives, diuretics, cathartics, bloated, and buttocks) as evidenced by the requests for elaboration in interviews, most EEQ items were quite explicit. Therefore, it is doubtful that items were misunderstood and answered randomly. Carbohydrate-craving may be multi-faceted. The literature suggests that carbohydrate-craving is associated with bulimia (Hawkins & Clement, 1980; Wardle & Beinart, 1981), with anorexia nervosa (Crisp, 1970, 1978, 1981-82; Slade, 1982), with depression (Hopkinson, 1981), and with dieting (Wardle, 1980; J. J. Wurtman, 1983). Several of these associations can be discerned in the present study. The primary interest was the relationship between carbohydrate-craving and bulimic-like behaviors and attitudes. This association is evident in the correlation of .53 between Factor 2 (sweet-bingeing) and the EAT-26 bulimia subscale, as well as the negative (-.34) correlation between that factor and the EAT-26 oral control subscale. As well, the CHO selection criteria loaded on the EDI Bingeing factor. The association between depression and carbohydrate-craving was evident in the large proportion of carbohdrate-cravers who scored in depressive range on the CRS.

Thus, the relationships of primary interest were

considered established. The question remains: Was that which was being measured truly anorexic- and bulimic-like behavior?

EEQ Factor Analysis

As the EAT-26 which is embedded within the EEQ has been factor analyzed, comparisons can be made between the two analyses. The first factor on the Garner et al. (1982) factor analysis of the EAT-26 was "Dieting" just as it was here. Their second factor was "Bulimia and Food preoccupation" and a third was interpreted as "Oral Control". The three accounted for 40.2% of the total variance. The second and third factors in the current analysis were "Sweet Bingeing" and "Obligatory Running". The first three factors accounted for 32.6% of the total variance. Nine factors were retained in the factor analysis in this study, because of the exploratory nature of the research.

In the Garner et al. analysis all statements in the EAT-26 loaded on the three factors. The similarity of the Garner et al. factors to the current factors can be assessed by ascertaining on which of the current factors the statements of the EAT-26 factors loaded. The EAT-26 statements from the Garner et al. factor 1 were numbered as follows on the EEQ: 7, 11*, 18, 27, 29, 30, 31, 32, 34, 35, 50, 55*, & 60. (This is the subscale that is referred to as FAC1 in the present study. The starred items

were negatively keyed.) All of these loaded on factor 1 of the EEQ with the exception of three. Statement 35, "Enjoy trying new rich foods.", appeared on three EEQ factors, negatively on 1 and positively on 2 and 7. The other two missing statements were both reworded. Statement 11, "Crave sweets (e.g. chocolate bars, desserts, sugar-loaded snacks).", was originally "Avoid foods with sugar in them." in the EAT-26. Because of its similarily to statement 30 ("Particularly avoid foods with carbohydrate content.") and the rarity of negatively coded items on the EAT-26 it was restated hoping to draw a negative response from restrictive-like eaters and a positive response from "carbohydrate-cravers". The consequence, however, was a medium positive loading on both factors 1 and 2 of the EEQ. Similarly, statement 55 was restated from the wording in the EAT-26 "Feel uncomfortable after eating sweets." to "Feel calmed down after eating sweets." in the EEQ. It loaded .58 on factor 2. Generally, however, the dieting factors in the Garner et al. study and the current study were similar.

The second factor of the EAT-26 "Bulimia and Food Preoccupation" (referred to as FAC2 in the present study) had statements numbered as follows on the EEQ: 21, 36, 37, 39, 58, & 61. Statements 21, 36, and 37, all relating to food preoccupation, all loaded on both EEQ factors 1 and 2. Statement 58, "Have gone on eating binges where I feel that I may not be able to stop.", met a similar fate.

Statements 39 and 61, referring to vomiting, had loadings on EEQ factor 4 (characterized as Purging). Statement 61, however, had multiple loadings, also loading on factor 6, which was interpreted as Thinness. Statements that characterize bulimia appear on 4 EEQ factors, i.e. factors 1, 2, 4 and 7, suggesting overeating was associated with, respectively, dieting, sweet bingeing, purging and food craving, for this population, but not with the obligatory-running of factor 3 or the low rates of eating which appear to be indicative of factors 6 and 8. Factor 2 was not as similar to the CHO subscale as was hoped. The CHO selection criterion used positively coded statements 10, 11, 12, 24, 25, 38, 51, and 55, as well as negatively coded 4, 28, and 30. Statements not loading that were expected were:

10. When I am upset, I worry that I will start eating.
24. Find it easy to sleep late in the mornings.
25. Feel low in energy or slowed down.
51. Particularly desire food with high carbohydrate content (e.g. bread, potatoes, rice, etc.).
4.* Favorite snacks are proteins: meat or cheese or eggs.
28.* Eat sweets and carbohydrates without feeling nervous.
30.* Particularly avoid foods with carbohydrate content (e.g. bread, potatoes, rice, etc.).

These were expected because of J. J. Wurtman's (1983) description of carbohydrate-cravers. Statements 24, 28, 30, and 51 all loaded on EEQ Factor 7, food-craving, forming the core of that factor. If fewer factors had been retained the

nature of the second factor would have broadened to include more than "Sweet Bingeing". While protein apparently was not a favorite snack food, evidenced by statement 4 not loading on any factor, carbohydrates were not well differentiated from fats by "food-cravers". Sweet-cravers apparently do not think of themselves as bread and pasta lovers. However, in interviews where the full range of carbohydrates could be elaborated for the subject, many indicated they craved breads, pastries, and pastas as well as sweets.

The EAT-26 third factor, Oral Control (referred to as FAC3 in the present study) had statements numbered 3, 5, 17, 23, 42, 46, & 52 on the EEQ. Although the factor analyses of the EEQ produced two factors, 6 and 8, that might be analogous to oral control, none of the items loaded on EEQ Factor 8 and only statements 46 and 52 loaded on EEQ Factor 6. Statement 3 had a small loading on EEQ Factor 9. Statement 5 loaded on EEQ Factor 2, whereas 17 ("Avoid eating when I am hungry.") and 23 ("Feel that others pressure me to eat.") had multiple loadings. Statement 42 ("Take less time than others to eat my meals.") loaded on none of the factors, perhaps because it was altered from the original EAT-26 wording of "Take longer than others to eat meals."

In terms of statistical reliability, the current study was somewhat closer than the Garner et al. study to meeting

the most stringent criteria laid down by statistical theorists. Thorndike (1978) and Nunnally (1967) both advise the minimum sample size for factor analysis should be 10 times the number of variables. Variations in mood as well as personality differences contribute "noise" to survey data and being able to account for close to 40% of the variance is generally considered a good result.

Garner et al. used as their subjects a sample of 160 consecutive consultations from their female anorexia nervosa patients and 140 female comparison subjects from first and second year university students (their mean weight was reported at 96.6% of the average weight for age and height). The anorexics were diagnosed by a modified version of the Feighner et al. criterion (Garfinkel & Garner, 1982) and their mean weight was reported at 74.1% of the average weight for age and height although bulimic anorexics were at 80.2%, whereas restrictive anorexics were at 67.5%. The overall percentage of cases correctly classified on the basis of the cut-off score of 20 was 83.6%.

In comparing the factor analyses, there are two important differences to be noted. First, the EAT-26 was distorted in the present study by the intentional addition of two subscales, CHO and OB-R, and a number of other statements, plus some alterations were made to the EAT-26 statements. Second, approximately half of the population studied by Garner et al. were anorexia nervosa patients, the

other half being equivalent to the population in the present study. Garner et al. did not anticipate discovering any anorexics in their university population while it was estimated in the present study that 10% of the women could have scores in the anorexic range if epidemiological studies (e.g. Crisp & Toms, 1976; Duddle, 1973; Jones, Fox, Babigian, & Hutton, 1976) are correct. Thompson and Schwartz found that 25.2% of college females tested had scores equal to or greater than 25 on the EAT-40. The mean score on the EAT-26 for the university women in the Garner et al. study was 9.9 (sd=9.2, suggesting the highest scores may have been in the range of 19.1). The anorexics in their study had a mean score of 36.1 (sd= 17.0). However, in this study (c.f. Table 4) the EAT-26 mean score for the 399 women was 15.7. Dividing the females by the suggested criterion score resulted in 105 women above the criterion, with a mean score of 28.7, while those below the criterion had a mean of 11.0. Not only do scores appear to be much higher than those obtained in the Garner et al. study, the scores perhaps accrue from an "EAT-23" rather than from 26 statements. That is, because three of the original EAT-26 statements were altered and the statements had multiple factor loadings the scores on these statements may have been so low they did not substantially add to subjects total EAT-26 score (EEQ statements numbered 3 & 42). This should have resulted in lower rather than higher

total scores. The Type II error appears to be very high in the present study.

Type II Error

A way of estimating the Type II error in the present study is to examine the subjects interviewed who had EAT-26 scores above the cutoff of 20 used by Garner et al. and compare the subjects' EAT-26 scores with the subjects' score on the variable "Interviewer's Rating of Anorexic-like". In Table 7 the indices of agreement for the females interviewed in this study are compared with the indices of agreement for students interviewed in the Garner and Garfinkel study (1980). Except for positive predictive values, the indices are similar in the two studies. Of the 75 females interviewed in this study, 44 had scores above 20. Of those 75 females, 26 were judged anorexic-like in their eating patterns according to the variable "Interviewer Rated Anorexic-like". If it is accepted that the latter variable is correct the EAT-26 score predicted correctly 26 of 44 times (positive predictive value=.59, false positive proportion=.39). However, 3 were judged anorexic-like although they had scores lower that 20 (i.e. scores of 19, 12 & 6). Therefore, the false negatives were 3 of 31 (proportion=.10). If 29 is used as a cutoff score the proportions change so that of the 75 females interviewed, only 30 have scores above the criterion (the ANR, like anorexic-restrictives, and ANB, like anorexic-bulimics). Of

those 30, 19 were judged anorexic-like (9 of the ANR group and 10 of the ANB groups). However, 7 of the OB-R females, selected for interviews because of their obligatory attitudes toward exercise, were rated anorexic-like and none had scores above 29. Thus, the EAT-26 with the higher cut-off score was correct, given the interviewer rating is correct, in 19 of 30 cases (positive predictive value=.63). The higher cutoff score achieved a better accuracy rate but not the .836 that Garner et al. obtained. However, false negatives occurred on 7 of 26 cases, giving a proportion of false negatives of .27. Thus, sensitivity of the EAT-26 for females interviewed was .73 (19/26) and specicifity was .78 (38/49), if 29 is used as the cutoff criterion. When 20 is used as the criterion specicifity falls to .61 but sensitivity rises to .9. Williams et al. note that it is desirable to have sensitivity equal to specicifity, therefore the higher criterion is advisable.

Weight Criterion

Another measure that could be taken into account when judgements are made as to whether female subjects closely mimic anorexia nervosa, is the weight loss the subject has experienced. This was not taken into account in the variable "Interviewer Rated Anorexic-like" or in EAT-26 scores. Among those with EAT-26 scores greater than or equal to 29 who were rated anorexic-like by the interviewer, 11 had been or were at least 15% below the average weight

for age and height. Three more had been or were nearly 15% below, and five were not and never had been underweight any considerable amount. Of those 11 individuals who had EAT-26 scores greater than or equal to 29 but who were not counted anorexic-like (on the variable "Interviewer Rated Anorexic-like") only 3 had been or were at least 15% below the average weight for age and height. One had been nearly that much underweight and 7 had never been underweight any considerable amount. Of the 7 (OB-R) females who had EAT-26 scores less than 29, but who were rated as anorexic-like by the interviewer, only 1 was or had been 15% under the average weight for age and height (her EAT-26 score was 12). One had been close to that criterion (her EAT-26 score was 25) and 5 had not been appreciably underweight (EAT-26 scores of 6, 19, 24, 26, & 27).

The weight a patient must display to meet anorexia nervosa diagnostic criteria is currently contentious. Older criteria required a 25% weight loss (Feighner et al., 1972), *DSM III* allows the loss to be calculated on the basis of expected normal weight, and recently some researchers have suggested a 15% loss is sufficient when behavioral criteria are met, others suggest weight loss not be one of the criteria (e.g. Crisp, 1981-82). In *DSM III* bulimia may be distinguished from anorexia nervosa primarily (besides requiring a particular bingeing pattern) by bulimia having no criterion for weight loss. Amenorrhea is not part of the

bulimia symptomatology either.

In the present study, in all female groups, a large percentage (20-53%) report being 15% below normal standard since achieving present height (variable "Lowest Weight Proportion" in Table 6). In two female groups (CHO and ANR) 1 person in the 15 (7%) reported having been 35% below normal. A medical diagnosis of anorexia nervosa had been applied to one. Such a reduced weight meets the most stringent of the weight criteria for anorexia nervosa. However, two male groups similarly have 1 in 15 (7%) who have been 30% below the normal standard. And 5 groups have several members who report being 20% underweight. Obviously, low weights alone cannot discriminate those who are anorexic-like. Surprisingly, more of the low scoring females have been lower in weights, whereas considerably more of the anorexic-like groups, ANR and ANB, reported higher past weights than other groups (the variable "Highest Weight Proportion" in Table 6). Thus most of the ANB group would be considered bulimic rather than bulimic-anorexics (although 6 had been 15% below standard). Most were currently within 10% of their normal weights and 20% were overweight.

Bulimia Rating

A variable "Interviewer Rated Binger" was included, similar to the variable rating anorexic-like behaviors and attidudes. Close agreement is evident between the subjects'

ratings of whether they were binge-eaters ("Self Rating Binger") and the interviewer's rating of whether the subjects were bulimic-like, that is, whether their description would meet the *DSM III* definition of a binge (variable Interviewer Rating Binger). Of the 120 interviewed 23 rated themselves as bingers. Just two individuals provided descriptions that would not meet the *DSM III* criteria for a binge. The interview subjects who misclassified themselves as bingers described "binges" in which a few cookies and glasses of soft drink were consumed.

Nine of the 21 bingers were in the ANB group. The ANB group is distinguished by the large percentage who fear they cannot stop bingeing (c.f. variable "Fear Not Stop Binge" in Table 6). The percentage is actually larger than the percentage judged to be real bingers. Bingers were expected in the ANB group because the group was selected for high scores on the EAT-26 subscale (FAC2) which Garner et al. (1982) advise distinguishes between bulimic- and restrictive-anorexic patients. Five of the 9 bingers in the ANB group were, or had been, at least 15% below normal weight, thus could be considered bulimic anorexics. The other 4 met the *DSM III* criteria for bulimia. Half of the remaining 6 in the ANB group appeared to be avid but normal dieters; the other 3 were anorexic-like rather than bulimic. Thus 6 (40%) appear to

have been false positives. Because the EAT-26 does not claim to identify bulimics who are not anorexic, the bulimics in other groups are not considered false positives.

If the question "Have you ever had an episode of eating an enormous amount of food in a short space of time?" (the variable Ever Binge in Table 6) had been used to assess the proportion of bingeing in the population, very different conclusions would have been reached. Answers showed poor agreement with either the subjects' ratings or the interviewer's rating of bingeing. This suggests such a question is a poor measure of bulimic behavior. Very similar questions have been used in other research which has found very high rates of bulimia in college populations (e.g. Hawkins & Clement, 1980).

EDI Discussion

The EDI did not perform as expected in distinguising the "normal dieters" from those who were anorexic- or bulimic-like among the individuals interviewed. Of the 6 individuals determined to be anorexic-like by at least four of the EDI subscales, one individual did not indicate anorexic-like attitudes or behaviors during the interview. Given that individuals with these attitudes and behaviors are usually very secretive, the interview information may be incorrect. However, whereas the EDI appeared to be identifying pathologically disturbed attitudes in the 5 individuals, it did not identify even one of the women who

had been diagnosed as anorexic by members of the medical profession. Of the 21 individuals who met the *DSM III* criteria for bulimia, only 5 were identified by the EDI. As well, of the 27 individuals coded as practicing purging or fasting along with restrictive dieting, just three were identified by the EDI. Thus, as noted, EDI scores did not agree well with other predictive measures used to assess eating disorders. When judged against these other criteria, the positive predictive value of the EDI was little better than chance. Thus, it was concluded that the EDI had poor discriminatory power.

Notably, the female OB-R and the ANR and ANB groups had extremely high scores on the Drive for Thinness subscale as well as on Body Dissatisfaction, Perfectionism, and Interoceptive Awareness, as would be expected in anorexic-like individuals, however, few of these females had scores as high as the mean scores for anorexia nervosa patients. Perhaps, the criteria were too stringent. Using anorexic mean scores would, after all, have made half of the anorexia nervosa patients false negatives. A need is, therefore, evident for an explicit EDI scoring system.

The factor analysis of the EDI may provide some clues as to why the EDI performed poorly in this study. As the development and validation report of the EDI did not report a factor analysis the only comparison to be made was with their 8 subscales which were deductively derived and then

empirically validated (Garner et al., 1983a). The scales are said to differentiate with very little overlap between anorexia nervosa patients and females from college psychology classes. Considering the nature of the interview population in the current study, i.e its selection from 613 functioning students, as well as, its small size for a factor analysis it was remarkable that the Garner et al. subscales were upheld as well as they were. As noted above, Table 5 uses the labels provided by Garner et al. where they seemed appropiate.

Factor 1 had all of the statements they list in a "Drive for Thinness" subscale, but many more as well. The first factor usually gleans most of the items. It was interesting that here the Garner et al. subscale of "body dissatisfaction" disappeared to become part of factor 1. But it was primarily the lower body that produced dissatisfaction in the dieters in the interview population. The present population was biased toward women (75 females of 120 subjects) and it may have been biased toward dieters because 40 males and females report following some type of diet. Some male weight lifters were on high protein diets and reported dissatisfaction with their body shape (like females they think their hips are too large and their stomachs not flat enough).

Whereas, the Garner et al. subscales of Perfectionism, Interpersonal Distrust, and

Ineffectiveness hold up well and Maturity Fears retained its nature, the subscale Bulimia shared all its loadings with other factors. Statements characteristic of bulimia loaded particularly on factors 1 and 2 (Dieting & Ineffectiveness). Perhaps the present population with its 30 subjects selected for high scores on the criterion for carbohydrate-craving (CHO) and the subjects with relatively high scores on the bulimic component of the EAT-26 cause the bulimic subscale to dissipate. Perhaps the EDI statements should be more definitive.

Other Variables of Interest

There are a few other variables in Table 6 that can be brought to bear on the question of whether the EAT-26 is identifying anorexic- and bulimic-like individuals. Whereas, the criteria for anorexia nervosa and bulimia do not give particular emphasis toward the behavior of vomiting for weight control, this behavior is not usually considered part of normal dieting strategies. Vomiting occurs in both anorexia nervosa and in bulimia but very few researchers suggest self-induced vomiting occurs independent of either condition (Fairburn, 1980). Rarely is it associated with other psychiatric conditions (Garfinkel & Garner, 1982). The only subjects who reported they were or had been under psychiatric care for food related problems reported diagnoses of anorexia nervosa or bulimia and all were functioning university students. Therefore, the questions

and statements related to vomiting in this study are considered relevant to the efficacy of the EAT-26. High exercise rates, like vomiting, are not emphasized but they are on the list of symptoms in Feighner et al. (1972) and other diagnostic criteria. The exercise measures in the present study can thus be considered an anorexic-like behavior when accompanied by other anorexic criteria. Another symptom, frequently considered necessary for a positive diagnois of anorexia nervosa is amenorrhea. Recently it has been considered a symptom that is to be expected when body weights are unduly low. As few subjects currently were at their lowest weights those who reported a history of amenorrhea were the best evidence available to support the distinctions made by the EAT-26.

High rates of exercise as well as vomiting and a history of amenorrhea appear in three of the interview groups. On the variable Missed Menses Frequency, only those in OB-R, ANR and ANB groups report that several menses have been missed. These were 13 individuals who had been at least 15% below normal weight for height or very close to that. While the OB-R females were predicted to be similar to ANR and ANB groups, it was surprising to find vomiting for weight control in five of the OB-R group and to find two others who use either diuretics or laxatives. Only the female OB-R, ANR and ANB groups reported vomiting. None of the OB-R group had scores 29 or higher on the EAT-26. All

of the ANR and ANB groups were selected to have scores that high. As well, all vomiters were rated by the interviewer as anorexic-like. The OB-R group was of course selected for its obsessional attitude toward exercise. However, all of the group actually had very high rates of exercise. The ANR and ANB groups were both highly similar to the female OB-R group on exercise rates such as Sports Hours per Week. The ANR and ANB groups were found to be involved in a variety of high-energy-consuming activities. Whereas, all females groups had quite similar scores on the variable Sports Intensity the differences in the variable Sports Hours per Week indicates that the ANR, ANB and OB-R groups were carrying out these high intensity sports for longer periods of time.

Just as sports intensity was quantified, the intensity of vomiting can be assessed by contrasting the group responses for "Vomiting Frequency". Of the ANB, 10 individuals (60%) vomit and 2 of those do so one or more times a day. Two more of that group and one of the ANR group vomit 2 to 6 times per week. Another individual from the ANB group vomits once a week, 2 more 1 to 3 times a month and 2 less than that. The 4 in the OB-R group who vomit do so less than once a month. Notably, there was no indication from the EEQ measures on vomiting and laxative use (LAX & EEQ Q.) that the OB-R females would include some vomiters and none of the ANR group reported vomiting on

the earlier measure, whereas the 10 individuals in the ANB group reported accurately. There is a further discrepancy for the female OB-R group in their answers on "Intend to Vomit For Weight Loss" and "Vomiting Frequency" as one subject reported the vomiting "just happens" without intent.

Differences Between Female Groups

In the analyses of the female groups in Table 6 the groups appear to be graded, on some variables, from a low to high as the groups are scanned from left to right, or from the control group to the two anorexic-like-groups. The stairstep pattern is seen on the relative frequency distributions for variables: Intend to Vomit for Weight Loss, Vomiting Frequency, and Binge Urges. The gradation occurs also on the variable Diet Frequency, and on EDI subscale 1, Drive for Thinness, and some other variables. Because the stairstep pattern appears mimetic of the proportion of high EAT-26 scores in each of the groups it is possible that any differences noted between the groups may be due to the proportion of those scoring high on the EAT-26. No causal analysis was done to explore this. However, the procedure used to select interview subjects introduced a downward bias, with respect to the scores on the EAT-26, in both the CHO and OB-R female groups. That occurred because a number of females met the criterion for either ANR or ANB plus the criteria for one or both of CHO and OB-R, but as the ANR and ANB groups were selected first,

30 high scoring females were removed from the sample from which the CHO and OB-R groups would be chosen. Thus the probability of a female with an EAT-26 score above 29 being in either the CHO or OB-R groups was greatly reduced. It would be expected, therefore, that a different experimental design would find these four female groups to be more similar that the analyses of the present study indicate.

Differences between the ANR and ANB groups, however, are not apt to be due to any differences between their total EAT-26 scores. The ANR and ANB groups were significantly different from other females only on Diet Frequency and the Interviewer's Rating of Anorexic-like Behaviors. Of course the EAT-26 total score and FAC1 were significantly different because these groups were selected to be different on these variables. The ANB group was also selected to be much higher than the ANR group on FAC2 and so the significant difference between them was expected. ANR and ANB were also significantly different on FAC3 and EDI subscale 3, but FAC3 is the Oral Control factor from the Garner et al. (1982) factor analysis and the EDI subscale deals with bulimia, therefore these differences were expected. As well, significant differences between ANR and ANB groups occurred on the CHO selection criterion.

Continuum Theory Supported

The mere presence of anorexic-like behaviors and attributes in the university population in this study

supports the Garfinkel and Garner theory that anorexia nervosa occurs along a continuum of severities. That is, a drive for thinness and the starvation manifestations of anorexia nervosa appear to occur to varying degrees in the general population. Garfinkel and Garner suggest the distinctions between the full-blown syndrome of anorexia nervosa, with changes in the hypothalamic-pituitary axis and mild forms "is partly, but not entirely, related to severity both in terms of starvation effects and likely in psychological predisposing and perpetuating factors." (Garfinkel & Garner, 1982, p. 33). The recent clinical reports of mild, marginal, *formes fruste*, atypical or benign anorexia nervosa support the theory that eating disorders occur on a continuum of severities. Support comes as well from the community and college studies similar to the present study (Button & Whitehouse, 1981; Boskind-Lodahl & White, 1978; Cooper & Fairburn, 1983; Cooper et al., 1984:, Halmi et al., 1981; Hawkins & Clement, 1980; Mitchell & Pyle, 1982; Wardle, 1980). Thus there is currently considerable support for the continuum theory.

An early indication that normal populations might contain girls and women who show anorexia-nervosa-like symptoms comes from the research of Berkman and Nylander. In 1948 Berkman described a group of adolescent girls who found, after drastically dieting, that they could not eat enought to maintain their goal weights and so their weight

loss continued. Nylander (1971) surveyed 2370 Swedish adolescents and found 10% of all girls reported symptoms, in connection with dieting, which were considered typical of anorexia nervosa. At this time Nylander (1971, p. 24) pointed out that "Nowhere has a case of incipient or mild anorexia nervosa been described." He questioned the validity of theories of anorexia nervosa based entirely on the late stages of the disorder (e.g. Freud, 1958; Dally, 1969). Crisp (1970b, 1978, 1979, 1981-82) and Garfinkel and Garner (1982) are among the few of the more recent theorists that take into account the possibility that anorexia nervosa occurs on a continuum of severities (c.f. Barry & Klawans, 1976; Bruch, 1974; Mawson, 1974; Redmond, Huang, Baulu, Snyder, & Maas, 1977). Theoretically the notion that anorexia nervosa occurs on a continuum is still not widely accepted.

Garfinkel and Garner's (1982) theory suggests the increased incidence of eating disorders can be attributed to socio-cultural phenomena. Others have argued that motivation for dieting is supplied by our culture (Boskind-Lodahl & Sirlin, 1977; Boskind-Lodahl & White, 1978; Orbach, 1978). Support is gained from research such as the survey of body measurements of *Playboy* centerfolds and *Miss America* contestants over a 20 year period (Garner et al., 1980). Evidently, even the more buxom role-models of the Western female have become more

tubular over time. By contrast the *haute couture* mannequin, the role model for the upper classes, appears skeletal. While the role-models have become thinner over the past 20 years, the average North American female under 30 has become heavier according to recently revised actuarial statistics (Metropolitan Life, 1983). The prevalance of dieting may reflect attempts of women to bring their weight in line with lower ideal weights. Crisp (1981-1982) suggests these ideal weights may be unrealistically low creating a conflict for the individual: the greater the difference between the goal weight and the "natural" weight, the greater the conflict, and consequently the greater the probability of an eating disorder, other things being equal. He suggests weight conflict may begin with a brief and small weight gain at a time when the individual's social and sexual restraint systems are also changed (typically the individual moves away from home to a large anonymous city). Thus, both Crisp's and Garfinkel and Garner's theories of eating disorder consider the contribution of the socio-cultural factors.

The present study supports the notion that young women are motivated to diet, do diet, and a proportion use abnormal methods to diet. Results attest to the beliefs of women that they are overweight: 41% rated themselves as overweight, whereas only 5% were as much as 15% overweight. When only the females scoring above the suggested cutoff

score for the EAT-26 are considered, 63% rated themselves overweight whereas 10% actually were at least 15% overweight. The prevalence of dieting in the female groups was high: 31% in all females and in the high scoring females, 67%. A mere 6% of the males said they were currently dieting. Only 4% of the males dieted several days each week or more frequently but 25% of all women and 59% of the high scoring women engaged in dieting at that level. Furthermore, the scores on the EAT-26 indicate the anorexic nature of female dieting styles. As noted above, the odds ratio indicates women were 9 times more likely than men to have scores above the suggested cutoff score. At 26% the percentage of females scoring above the recommended cutting point is higher in this study than in most other reports. However, Thompson and Schartz (1982) found 25% of their 123 upper-middle class college females scored above the cutoff (30) on the EAT-40. Button and Whitehouse (1981), testing 446 females at a technical college, found only 6.3% had high scores (they used a cutoff of 32 for the EAT-40). Garner and Garfinkel (1979, 1980) found 9% to 13% of their "normal comparison group" of university students scored above the EAT-40 cutoff, but 29% of dance students and 27% of modelling students had high scores (above 30). The only study other than the present one to use the EAT-26 (Garner, Olmsted, Bohr, & Garfinkel, 1982) found 15% of the university population scored above the cutoff (20). The

prevalence of dieting in females has been noted in all of the foregoing studies but the present study contributes evidence that women believe they are overweight even when they are not.

Abnormal Strategies: Vomiting

Anorexic behaviors are evidently a female strategy. Examining responses on the EAT-26 items concerning vomiting, reported in Table 4, indicate vomiting after eating is a female strategy. The only male who answered positively was one who scored above the cutoff. Because he was drawn in the random selection of male carbohydrate-cravers, it can be reported that he occasionally vomited after eating food he dislikes. In interviews, several other males said they vomited after alcohol overindulgence, a behavior they saw as normal, but they never vomited after food overindulgence. However, 5% (19) of the 399 females responded positively to the EAT-26 items on vomiting. Of those with scores above the cutoff, 15% (15) answered positively to the vomiting items. In interviews it was evident that at least one woman who used vomiting for weight control had not given wholly truthful responses on the first questionnaire. Thus the 4 females who scored below the EAT-26 cutoff might be expected to have done the same. Because the one EAT-26 item (No. 61) asked blatantly whether the subjects vomited after eating (the other item asked whether subjects thought about vomiting after a meal), that item was considered alone.

None of the males but 3% of the females responded that they did, "often", "very often", or "always". All of these females were in the group scoring above the cutoff and 1% answered at each frequency. Vomiting rates for females in this study are thus analogous to studies by Button and Whitehouse (1981), Cooper and Fairburn (1983) and Crisp et al. (1976), but were not as high as those in Garner, Garfinkel, and Olmsted (1983) and Halmi et al. (1981).

Like Thompson and Schwartz (1982), it was noted during interviews that those who use vomiting for weight control know others who use it and were often taught how to vomit by a friend. Those who do not vomit and who have never tried it for weight control did not personally know anyone using the strategy. Future research might do well to gather information on this explicitly rather than through *ad libitum* observations.

As noted in relation to reports of vomiting, females interviewed downplayed the seriousness of their dieting behaviors such as vomiting and laxative use as well as the extent of their dieting. Consequently, even such measures as the Interviewer's Rating of Anorexic-like behaviors probably underestimated the number with eating disorders as the interviews did not involve clinical assessment. The use of a cover story, a standard strategy in social psychology, might be advisable in light of the underreporting of deviant symptoms such as vomiting in the first phase of the study

and the extent of such behaviors as vomiting in interviews. The same type of questions asked in this study could be asked in another context. If Swedish research is exemplary, more truthful responses might result. Holmberg and Nylander (1971) found 41 of 54 consecutive cases of peristent secondary amenorrhea seen at Umea University Hospital, presented a clinical picture characteristic of anorexia nervosa. They suggested this was subclinical anorexia nervosa. Fries (1977; Fries, Nillius, & Pettersson, 1974) reports analogous results from a study of secondary amenorrhea in a sample of 2000 women. Therefore, if researchers said they were studying secondary amenorrhea, a condition over which the subject has no control, rather than eating and exercise, then possibly a "truth set" would be instilled.

Abnormal Strategies: Laxative-use

Although laxative use is not as indicatory of abnormal eating behaviors as vomiting, it is interesting to note that the two items included in the EEQ on laxative-use indicate a very small percentage of the population responds positively. Two of the 8 males (25%) with scores above the recommended EAT-26 cutoff score (20) reported using laxatives and, in the females, twice as many of the high scoring females, compared to low scoring females, indicated laxative-use. Thus obtaining information on laxative- as well as diuretic-use might be advisable in future research.

Theoretical Implications

The evidence that anorexia nervosa occurs on a continuum has implications for diagnostic criteria. Two conspicuous issues emerge from the present study. The first is that exercise attitudes and rates are given no importance currently in the *DSM III* criteria for eating disorders. The second is the undue emphasis given body weight in anorexia nervosa.

Considering the latter issue first, research implies that body weights are not a good indicator of the type of eating disorder an individual may have. Bulimia, is evident in anorexia (Russell, 1970) at normal weights (Halmi, Falk, & Schwartz, 1981; Hawkins & Clement, 1980, in press) and in the obese (Fairburn, 1982; Fairburn & Cooper, 1982). And the *DSM III* criteria for bulimia are not concerned with weight. But there have been reports of anorectics at normal body weights and at obese stages, (Beumont, 1977; Crisp, 1981-82; Dally & Gomez, 1979; Duddle, 1973). Crisp (1981-82) has evidence that, by using (or ceasing to use) diuretics or laxatives, patients are able to ajust their weight by 33 lb within two days. The irrelevance of body weight to eating disorders is also indicated by the possibility that obesity, counterintuitively, may be a stage of anorexia nervosa (Crisp, 1979, 1981-82). However, *DSM III* criteria for anorexia nervosa requires weight be 25% below the expected norm. Body weight seems to be over-

emphasized considering the syndrome is marked by wide fluctuations in weight.

The apparent independence of weight and the severity of eating disorders, seen in this study and in recent clinical studies is theoretically interesting. It suggests that the two major eating disorders, bulimia and anorexia nervosa, are not independent of each other in spite of the attempt in *DSM III* to make the diagnostic criteria mutually exclusive. The bulimia criteria appear inadequate if their frequency of use in research is an indicator. And the criteria for anorexia nervosa seems unable to encompass the wide variation of symptoms being seen in bulimic anorexia. Certainly, the criteria for distinguishing between bulimics and anorexics in studies such as the present one seem arbitrary rather than real. Critics of diagnostic criteria have been urging a change in the percentage of weight loss from the Feighner et al. (1972) figures of 25% to 15-20% (Dally, 1969; Rollins & Piazza, 1978). Some have argued that weight loss not be used as a criteria at all (Crisp, 1981-82; Garrow et al., 1982). This study and other studies on college and community populations suggest anorexia nervosa occurs on a continuum of severities and also that weight is not a useful criterion of the severity.

The most obvious example of the independence of weight and the severity of the symptomatology in the present study was presented during interviews. One young woman who had

told neither parents nor doctor of her eating problems, and therefore had not been diagnosed, reported that she had dieted to 110 pounds a year previously. When weighted, however, she was over 200 pounds. She said she was bingeing on incredible amounts of food but exercising vigorously every day and vomiting daily to try and control the phase of weight gain. Her scores on all the selection criteria and the EDI were at or near the top of the range. Except for her weight there was nothing to distinguish her from a bulimic anorexic. Her lack of a formal diagnosis of anorexia nervosa would make her classifiable as a bulimic but a past weight loss of 50 pounds would suggest anorexia nervosa rather than bulimia. Thus her case exemplifies the inadequacy of the diagnostic criteria.

Whereas the case histories revealed during the interviews in the present study have convinced this researcher that weight is often a misleading criterion, the evidence from the reported weights in the first phase of the study should help convince others. The normative data indicates that, at the female subjects' lowest weights since achieving adult height, 48% have been at least 15% underweight. Furthermore, 21% of females current weight was at least 15% under their expected weight. In interviews, the women at or below normal weights accurately reported their weight so reporting error probably does not enter into the calculation. It is noteworthy that, a number

of research reports accept a patient who is 15% underweight and has anorexic-like behaviors and attitudes, as fulfilling their diagnostic criteria for anorexia nervosa. Others would accept 20% underweight as fulfilling their criteria, but 27% of the females in the present study reported having been at that level. The most stringent criteria would accept 25% underweight, however, 7% of the present population of females reported having been that. The highest weight reported by 8% of the females was still 15% underweight (the 1% discrepancy is due to more subjects reporting highest weight). It would seem, given that high percentages of the "normal" female population at this age have been underweight to the extent that they would meet the weight criteria for an anorexic diagnosis, that the weight criteria may not be useful (the modal age in the study was 18). The alternate conclusion may be that eating disorders are becoming pandemic, considering first, that such high percentages of females have been underweight to such an extent, and second, that high proportions of females are indicating they have anorexic-like behaviors and attitudes.

The independence of weight and anorexic-like behaviors should lead to questioning not only the criteria for the diagnosis of eating disorders, but also the criteria for recovery. For example, Schwartz and Thompson (1981) found 31% of recovered anorectics were overweight. The implication in such followup studies has been that achieving

normal weight, or overweight, is synonymous with recovery. Recovery defined by weight is surely questionnable in light of the independence of weight and anorexic symptoms. Perhaps, any concerted effort to diet would again find these "recovered" women dieting with the obsessional approach of the anorexic. In the present study there were several women diagnosed as having anorexia nervosa by their physicians. The said, during interviews, they had recovered. They were of normal weight but were maintaining their weight by abnormal means, that is by privately bingeing and then, in fear of gaining weight, were using the strategies of the anorexic such as exercise, diuretics, laxatives, or vomiting to insure their weight did not climb above a particular goal weight. Two reported they were much happier when 20% underweight but their families and physicians were satisfied with their current weight status. It was difficult to believe they were recovered. The EAT-26 and CRS measures indicated they were not. Certainly, weight should not have been used as an indicator that recovery was complete.

Abnormal Behaviors Are Good Criteria

Cooper & Fairburn (1983) have argued self-induced vomiting and/or the used of laxatives and diuretics for weight control are better indicators of bulimic behavior than reports of gorging on food. These behaviors are associated with both anorexia nervosa and bulimia and may be better indicators of abnormal eating disorders than current

criteria. Cooper and Fairburn preferred these behaviors to define bulimia because they do not present the same problem of definition as "binge-eating". As stated in the introduction, it is difficult in the literature to distinguish as distinct syndromes the conditions being described as restrictive anorexia, bulimic anorexia, and bulimia, let alone the host of other syndromes that appear to be synonyms for the latter two. Because the abnormal behaviors used by those with eating disorders say more about abnormal eating than body weight does these behaviors appear to be preferrable as criteria for both bulimia and anorexia nervosa.

Exercise and Eating Disorders

The argument that obessional exercise is underemphasized in the study of eating disorders can be more directly made than the argument that weight criterion is overemphasized. Evidence exists that exercise, when it becomes obsessional, can become a perpetuating factor in anorexia nervosa (Epling et al., 1981, 1983; Smith, 1980; Yates et al., 1983). The present study indicates the relevance of obsessional exercise to anorexic behaviors and attitudes by 1) the importance of the factor termed "obligatory running" in the factor analysis of the EEQ, 2) the factor's small but significant correlations with the EAT-26 and its subscales, and 3) the extent to which the anorexic-like individuals were also obsessional exercisers.

In Table 4, results of dividing the population into high and low scoring groups on the basis of a cutoff of 20 on the EAT-26, indicates that 25% of the females above the cutoff met the OB-R selection criterion, in contrast to only 4% of the females below the cutoff. In Table 6, the interview group scores on the OB-R selection criterion were significantly different; generally, those who had higher scores on the EAT-26 had higher scores on OB-R. This also demonstrates that the attitudes of obsessional exercisers is associated with anorexic-like behaviors. Because exercising may be used be used by those with eating disorders in the same manner that they use vomiting, laxatives, and diuretics, that is, as a strategy to lose weight or to keep from gaining weight, it is important to measure the obsessionality and the rate of exercising.

Carbohydrate-craving and Eating Disorders

Crisp suggests a disturbance in the serotonergic satiety mechanism results from carbohydrate avoidance practiced by anorexics and those with the behaviors of anorexia nervosa because of insufficient ingestion of tryptophan (Crisp 1970b, 1978, 1979, 1981-82). As noted in the introduction research indicates that such carbohydrate deprivation can alter insulin response (Hales & Randle, 1963) and alter behavior, causing confusion, depression, and signs of dementia (Gibbons et al., 1979; R. J. Wurtman, et al., 1980). J. J. Wurtman's description of humans who crave

large amounts of carbohydrates resembles other researchers descriptions of bulimics (J. J. Wurtman, 1983; also J. J. Wurtman et al., 1983; Wurtman & Wurtman, 1981). As well, Hopkinson (1981) has found women who gain weight rather than lose, in clinical depression benefit by taking tryptophan, an essential nutrient of carbohydrates. As well as depression being noted in the diagnostic criteria for bulimia there is evidence that vomiters are more depressed that other anorexics (Bhanji & Mattingly, 1981; Stonehill & Crisp, 1977). Thus it was expected that there would be a strong relationship between a) bulimia and carbohyrate-craving, b) carbohydrate-craving and depression, and c) bulimia and depression.

The support for the association between bulimia and carbohydrate-craving is evident in the .53 correlation of FAC2, the bulimia and food preoccupation subscale of the EAT-26, with the second EEQ factor, sweet bingeing. As well, the CHO selection criteria loaded .57 on the fourth EDI factor, bingeing. A relationship between carbohydrate-craving and depression is evidenced by the high numbers of individuals with high scores on the CRS in the male and female interview groups selected on the basis of their carbohydrate-craving. If the standard cutoff of 10 is used to indicate a clinical level of depression then 38% of those above the criterion are carbohydrate-cravers. If 14 is used as the cutoff then 45% of those above the criterion

are carbohydrate-cravers. In contrast, the normal males and females have 7% with depressive scores if 14 is used as the cutoff and 17% if 10 is used. Besides the high proportions of high scores in the carbohydrate-craving groups, high scores were found in the three groups notable for having both vomiters and individuals who met several selection criteria. Those with high scores were either bulimic, carbohydrate-cravers or indicated they had reactive depression. Thus, the association between depression and both bulimia and carbohydrate-craving was evident. The correlations of the CRS with variables measuring bulimia, vomiting, and other anorexic-like behaviors further support the relationship of depression to eating disorders.

CONCLUSION

Because of the various evidence cited above, the conclusion is drawn that the EAT-26 was measuring anorexic- and bulimic-like behaviors and attitudes in this study, although imperfectly. Therefore, the relationships hypothesized between these behaviors and attitudes and those of 1) carbohydrate-craving and 2) obligatory-running, i.e. obsessional attitudes toward exercise, are supported. The presence of anorexic-like behaviors and attributes in the university population in this study supports the Garfinkel and Garner theory that anorexia nervosa occurs along a continuum of severities.

Three main issues emerged from the present study. The first is the evident relationship of carbohydrate-craving to depression, vomiting, and bulimia. This requires further research, nevertheless the explication in the present study of the relationship between carbohydrate-craving and depression and the anorexic- and bulimic-like behaviors is informative. The second issue is the importance of exercise attitudes to diagnostic criteria for the eating disorders. Exercise appears to be a strategy used by those with obsessional attitudes toward dieting, in a similar manner to the obsessional use of vomiting, laxatives, and diuretics. Thus clinical scales and research measures should include items to assess exercise attitudes and behaviors because of the information value. The third issue is the inadequacy of

body weight as a diagnostic criterion in anorexia nervosa. The apparent independence of weight and the severity of eating disorders, seen in this study and in recent clinical reports implies that body weights are not a accurate measure of the severity of the disorder or the abnormality of the dieting strategies. Currently, body weight appears to be functioning as a means of distinguishing bulimia from anorexia nervosa. However, high percentages of the "normal" female population at this age have been underweight to the extent that they would meet the weight criteria for an anorexic diagnosis, thus even the most stringent diagnostic weight criteria may be misleading.

The prevalence of dieting in females is a frequent finding of research. The present study contributes evidence that women believe they are overweight even when they are not. This study found, as have other community and college studies, that young females are using vomiting as a strategy for dieting. Assessing the frequency of vomiting and how this strategy is spreading among young female is thus advisable. As well, obtaining information on laxative- as well as diuretic-use would be advisable in future research in light of the importance these measures have as indicators of the severity of eating disorders. Because the abnormal behaviors exhibited by those with eating disorders say more about abnormal eating than does body weight the former appear to be preferrable as criteria for both bulimia and

anorexia nervosa.

A number of new measures have been recommended in this study for research on anorexia symptoms in normal populations. As an auxiliary conclusion, the current scales for eating disorders, the EAT-26 and the EDI, do not seem appropriate measures for males. The EAT-26 did not locate male bulimics although research by others suggests college populations do have a significant proportion of male bulimics. This may be more readily assessed by the direct questions used in the Halmi et al. research scale.

TABLE 1
EATING AND EXERCISE QUESTIONNAIRE VARIMAX ROTATED FACTOR MATRIX

EEQ STATEMENT	FACTOR 1 Dieting Wt Cncrn	FACTOR 2 Sweet 'Bingeing	FACTOR 3 Oblig'try Running	FACTOR 4 Purging	FACTOR 5 Intero- cep'tvns	FACTOR 6 Thinness	FACTOR 7 Food Craving	FACTOR 8 Daily Fasting	FACTOR 9 Perfec- tionism
1. Can clearly identify what emotion I am feeling.	-.04675	-.09023	-.00472	-.02208	-.78461‡	-.02056	.01599	-.05479	.01756
2. Skip breakfast and lunch.	.13286	-.03654	-.03925	.04956	.02794	.11490	.14940	.73552‡	-.01541
3. Cut my food into small pieces.	-.05754	-.20397	.05666	.20504	-.04776	.01887	.05562	-.10561	.39917¤
4. Favorite snacks are proteins: meat or cheese or eggs.	-.07560	-.16106	.23997	.03809	.02677	.08108	.28520	-.17749	-.12269
5. Display self control around food.	-.12204	-.49484‡	.12181	.02592	-.12880	.26921	-.17344	-.00146	.15360
6. Like running or exercising for its own sake.	-.03442	-.16021	.67372‡	-.06366	-.14077	-.04032	-.05215	-.12842	.06083
7. Am preoccupied with the thought of having flab on my body.	.78250‡	.10978	.11958	.00663	.08620	.10546	.11989	.04431	.02955
8. Am warm when others say they are chilly.	-.15388	.29626	.22983	-.17635	.02204	-.11244	-.19561	.30828	.05776
9. Exercise primarily to burn off calories.	.73390‡	.02472	-.03708	-.03596	-.01829	-.06288	.14559	.00955	.06405
10. When I am upset, I worry that I will start eating.	.47814	.48071	-.00642	.15580	.06574	-.07856	-.08567	.08869	.17718
11. Crave sweets (e.g. chocolate bars, desserts, sugar-loaded snacks).	-.03332	.56577‡	-.09995	-.06775	.01566	-.18229	.21023	.13395	.11682
12. Could eat a huge quantity of a food I crave (e.g. a whole cake or pie).	.07130	.60916‡	-.05353	.13833	.00657	.05221	.14829	.09730	.15324

Table 1 (Continued)

EEQ STATEMENT	FACTOR 1 Dieting Wt Cncrn	FACTOR 2 Sweet Bingeing	FACTOR 3 Oblig'try Running	FACTOR 4 Purging	FACTOR 5 Intero- cep'tvns	FACTOR 6 Thinness	FACTOR 7 Food Craving	FACTOR 8 Daily Fasting	FACTOR 9 Perfec- tionism
13. If I gain a pound I worry that I will keep gaining.	.74639†	.18520	.01247	.11420	.10207	-.05953	-.02073	.12187	.10298
14. Crave fatty foods (e.g. bacon, butter-loaded snacks, French-fried foods).	.11139	.27155	-.09450	.11556	.10350	-.05443	.57083†	.18446	-.02242
15. I hate being less than the best at things.	.13057	.14253	.18940	.07005	-.08773	.11402	.17221	.07684	.56423†
16. A weight fluctuation of 5 pounds would affect the way I live.	.53734†	.13448	.15529	.08128	.04626	.11621	-.01332	-.04029	.24397
17. Avoid eating when I am hungry.	.44755	-.02300	.15618	.08721	.06864	.06752	.03479	.37822	.02062
18. Engage in dieting be- havior.	.76851†	.17289	.08886	.04016	-.11946	-.01488	-.03442	.10319	-.03363
19. When I look in a mir- ror I feel bad about food I've recently eaten.	.72322	.30068	.03440	.01931	.08540	-.06405	.11251	.08458	-.05170
20. Try to distribute eat- ing over the entire day.	.13975	-.06774	.13382	-.10156	-.05696	.06891	.03806	-.62613†	.08357
21. Find myself preoccupi- ed with food.	.45469	.62830	.10897	.14432	.08148	.17127	.07761	-.14714	-.10483
22. Only outstanding per- formance is good enough in my family.	.05788	.16245	.14769	.03968	.05640	.11388	-.02369	.19188	.52382†
23. Feel that others pressure me to eat.	.19073	.30355	.05016	-.06921	.08301	.58338	-.13533	.14795	.11754
24. Find it easy to sleep late in the mornings.	-.00821	.05645	-.12217	-.13639	.12148	.02883	.52273†	.10246	.24226

Table 1 (Continued)

EEQ STATEMENT	FACTOR 1 Dieting Wt Cncrn	FACTOR 2 Sweet Bingeing	FACTOR 3 Oblig'try Running	FACTOR 4 Purging	FACTOR 5 Intero-cep'tvns	FACTOR 6 Thinness	FACTOR 7 Food Craving	FACTOR 8 Daily Fasting	FACTOR 9 Perfec-tionism
25. Feel low in energy or slowed down.	.21040	.10940	-.26112	-.00807	.24121	.14577	.27600	.03469	.37765¤
26. Have loss of sexual interest or pleasure.	.03471	.04898	-.02217	-.01932	.18173	.15013	-.07077	-.10233	.43643¤
27. Am aware of the calorie content of foods that I eat.	.64701†	.09468	.14993	.04594	-.10626	-.10113	-.15836	-.09762	.07014
28. Eat sweets and carbo-hydrates without feeling nervous.	-.56621†	-.04956	.06084	-.08829	-.07389	-.11758	.39749¤	.04698	.04061
29. Feel extremely guilty after overeating.	.79486†	.14864	.08806	.01381	.10606	.03114	-.08387	.03840	-.00373
30. Particularly avoid food with high carbohydrate content (e.g. bread, potatoes, rice, etc.).	.53654†	-.03999	-.01153	.02314	-.03206	-.04859	-.43657¤	.01979	.14974
31. Eat diet foods.	.62641†	.10676	.17694	-.00637	-.00275	.00079	-.11071	-.07500	.02486
32. Like my stomach being empty.	.51088†	.01881	.19679	.13698	-.09501	.25111	.11824	.24674	-.04624
33. Like to clean out my body with laxatives.	.07100	.07085	-.00971	.81539†	.11628	-.09587	-.08141	.07654	.17356
34. Think about burning up calories when I exercise.	.70180†	.04877	-.09294	.08625	.10876	.01573	.18203	-.01535	.07368
35. Enjoy trying new rich foods.	-.28395	.41172	-.05796	.02376	-.03507	-.11266	.40265	-.04425	.12250
36. Feel that food con-trols my life.	.39111	.59122	.05983	.26875	.11362	.20873	-.04148	-.14909	-.02372
37. Give too much time and thought to food.	.53851	.56897	.10197	.15039	.06692	.23286	-.01053	-.16824	-.12868

Table 1 (Continued)

EEQ STATEMENT	FACTOR 1 Dieting Wt Cncrn	FACTOR 2 Sweet Bingeing	FACTOR 3 Oblig'try Running	FACTOR 4 Purging	FACTOR 5 Intero-cep'tvns	FACTOR 6 Thinness	FACTOR 7 Food Craving	FACTOR 8 Daily Fasting	FACTOR 9 Perfec-tionism
38. Become anxious or irritable prior to eating.	.23605	.47443†	-.01040	.11347	.14364	.19213	-.04814	-.07628	.16647
39. Have the impulse to vomit after meals.	.23868	.26799	.10929	.58413†	.01893	.29281	.06705	.12382	-.04912
40. Have trouble keeping warm.	.17327	-.12192	-.12767	.20315	.10025	.39969¤	.25644	-.06924	.14018
41. Take laxatives.	.06108	.06906	-.05063	.82745†	.09864	-.06545	-.12909	.01983	.13381
42. Take less time than others to eat my meals.	.11453	.27120	.03064	.04086	-.03682	-.01128	.02249	.17679	-.08367
43. Feel depressed if I can't exercise or run daily.	.39557	.03146	.61098	.05726	-.09221	.14007	-.12658	-.01347	.09725
44. I get confused about what emotion I am feeling.	.03754	.15832	.04128	.09719	.80159†	.08987	.06094	.04761	.12947
45. Try to avoid eating until as late in the day as possible.	.20160	.13059	-.04155	.02386	.12779	.11185	.08806	.53130†	.10292
46. Feel others would prefer that I ate more.	-.00165	-.00046	.03776	-.01061	.05642	.79345†	-.04727	.16504	.12735
47. Eat sensibly before others and make up for it when alone.	.37205	.47155	.10447	.06127	.23761	.06829	.10877	.04632	.00076
48. Get confused as to whether or not I am hungry.	.32168	.37911	.13203	.07572	.30322	.18248	.07277	.13835	-.05155
49. Have continued to exercise after an injury (e.g. shin splints, tendinitis, bad back, etc.).	.15749	.03200	.68568†	-.02305	.04927	-.06980	.14814	-.02847	.01654

Table 1 (Continued)

EEQ STATEMENT	FACTOR 1 Dieting Wt Cncrn	FACTOR 2 Sweet Bingeing	FACTOR 3 Oblig'try Running	FACTOR 4 Purging	FACTOR 5 Intero-cep'tvns	FACTOR 6 Thinness	FACTOR 7 Food Craving	FACTOR 8 Daily Fasting	FACTOR 9 Perfec-tionism
50. Am preoccupied with a desire to be slimmer.	.82707‡	.21618	.04253	.04787	.07950	-.04984	.10194	.06532	-.03970
51. Particularly desire food with high carbohydrate content (e.g.bread, potatoes, rice, etc.).	.17486	.26061	.02726	-.01550	.01869	.08278	.55405‡	.01538	-.03266
52. Other people think that I am too thin.	-.24040	-.06925	.00039	.11142	.00532	.59105‡	.13194	-.12953	.20327
53. Can stop my exercise program without feeling anxious or depressed.	-.28115	-.13480	-.32129¤	.02899	.00434	-.12497	.27361	.15479	.02676
54. Have neglected my vocational, personal, or social responsibilities because of my workouts.	.11123	.17079	.51982‡	.12874	.21371	.08154	-.10421	.10061	.20572
55. Feel calmed down after eating sweets.	-.00800	.57809‡	-.06646	-.14757	.06887	-.10720	-.03539	.06439	.25706
56. Look forward to times and places when I can eat alone.	.20174	.45875‡	.17532	.27203	.16609	.19333	.10011	.04955	.00724
57. When I'm upset I don't know if I am sad, frightened or angry.	.08912	.19847	.03267	.09958	.70319‡	-.00545	.17457	.09547	.11294
58. Have gone on eating binges where I feel that I may not be able to stop.	.37047	.59920	.07289	.16512	.18111	.13835	.04484	.01359	.10648
59. Have taken pain killers (aspirin, 222's, etc.) to be able to run or take part in an event.	.02059	.06934	.26674	.30333¤	.10292	-.01233	.16674	-.00475	-.00863

Table 1 (Continued)

EEQ STATEMENT	FACTOR 1 Dieting Wt Cncrn	FACTOR 2 Sweet Bingeing	FACTOR 3 Oblig'try Running	FACTOR 4 Purging	FACTOR 5 Intero- cep'tvns	FACTOR 6 Thinness	FACTOR 7 Food Craving	FACTOR 8 Daily Fasting	FACTOR 9 Perfec- tionism
60. Am terrified of gaining weight.	.76357ǂ	.11364	.09050	.10825	.08955	.14635	.07019	.10354	.01764
61. Vomit after I have eaten.	.18617	.22920	.13644	.64498	-.08136	.32105	.07620	.10798	-.02359
62. Others have called my exercising an addiction.	.22890	.00215	.60298ǂ	.12762	.07813	.02307	-.14151	.05605	.15293
63. A good workout is as good as or better than an orgasm.	.05111	.05214	.34754	.06158	.05845	.02015	-.01744	-.07768	.43532
64. I eat or drink in secret.	.39791	.52141	.16306	.16907	.12488	.01856	.00550	.04214	-.11683
EIGENVALUES[1]	13.33	4.35	3.18	2.39	2 14	1.84	1.80	1.68	1.50
% VARIANCE	20.8	6.8	5.0	3.7	3.3	2.9	2.8	2.6	2.4

[1] The eigenvalue is an index of the meaningfulness of the factor: the higher the eigenvalue the more meaningful the

ǂ Pure loading higher than 0.75 (i.e. no other loadings of the same sign above 0.30 in the same row).

ǂ Pure loading between 0.45-0.74 (i.e. no other loadings of the same sign above 0.30 in the same row).

¤ Pure loading between 0.30-0.44 (i.e. no other loadings of the same sign above 0.30).
factor.

TABLE 2
EATING AND EXERCISE QUESTIONNAIRE FACTOR LOADINGS

EEQ STATEMENT	Loadings
FACTOR 1: DIETING EIGENVALUE = 13.33 % VARIANCE = 20 .8	
50. Am preoccupied with a desire to be slimmer.	.82707
29. Feel extremely guilty after overeating.	.79486
7. Am preoccupied with the thought of having flab on my body.	.78250
18. Engage in dieting behavior.	.76851
60. Am terrified of gaining weight.	.76357
13. If I gain a pound I worry that I will keep gaining.	.74639
9. Exercise primarily to burn off calories.	.73390
34. Think about burning up calories when I exercise.	.70180
27. Am aware of the calorie content of foods that I eat.	.64701
31. Eat diet foods.	.62641
28. Eat sweets and carbohydrates without feeling nervous.	-.56621¤
16. A weight fluctuation of 5 pounds would affect the way I live.	.53734
30. Particularly avoid food with high carbohydrate content (e.g. bread, potatoes, rice, etc.).	.53654¤
32. Like my stomach being empty.	.51088
FACTOR 2: SWEET BINGEING EIGENVALUE = 4.35 % VARIANCE = 6.8	
12. Could eat a huge quantity of a food I crave (e.g. a whole cake or pie).	.60916
55. Feel calmed down after eating sweets.	.57809
11. Crave sweets (e.g. chocolate bars, desserts, sugar-loaded snacks).	.56577
5. Display self control around food.	-.49484
38. Become anxious or irritable prior to eating.	.47443
56. Look forward to times and places when I can eat alone.	.45875

TABLE 2 (Continued)
EEQ FACTOR LOADINGS

EEQ STATEMENT	Loadings
FACTOR 3: OBLIG. RUN. EIGENVALUE = 3.18 % VARIANCE = 5.0	
49. Have continued to exercise after an injury (e.g. shin splints, tendinitis, bad back, etc.).	.68568
6. Like running or exercising for its own sake.	.67372
62. Others have called my exercising an addiction.	.60298
54. Have neglected my vocational, personal, or social responsibilities because of my workouts.	.51982
53. Can stop my exercise program without feeling anxious or depressed.	-.32129
FACTOR 4: PURGING EIGENVALUE = 2.39 % VARIANCE = 3.7	
41. Take laxatives.	.82745
33. Like to clean out my body with laxatives.	.81539
39. Have the impulse to vomit after meals.	.58413
59. Have taken pain killers (aspirin, 222's, etc.) to be able to run or take part in an event.	.30333
FACTOR 5: INTEROC. AWARE. EIGENVALUE = 2.14 % VARIANCE = 3.3	
44. I get confused about what emotion I am feeling.	.80159
1. Can clearly identify what emotion I am feeling.	-.78461
57. When I'm upset I don't know if I am sad, frightened or angry.	.70319
FACTOR 6: THINNESS EIGENVALUE = 1.84 % VARIANCE = 2.9	
46. Feel others would prefer that I ate more.	.79345
52. Other people think that I am too thin.	.59105
40. Have trouble keeping warm.	.39969
FACTOR 7: FOOD-CRAVING EIGENVALUE = 1.80 % VARIANCE = 2.8	
14. Crave fatty foods (e.g. bacon, butter-loaded snacks, French-fried foods).	.57083

TABLE 2 (Continued)
EEQ FACTOR LOADINGS

EEQ STATEMENT	Loadings
FACTOR 7: FOOD-CRAVING EIGENVALUE = 1.80 % VARIANCE = 2.8	
51. Particularly desire food with high carbohydrate content (e.g.bread, potatoes, rice, etc.).	.55405
24. Find it easy to sleep late in the mornings.	.52273
30. Particularly avoid food with high carbohydrate content (e.g. bread, potatoes, rice, etc.).	-.43657¤
28. Eat sweets and carbohydrates without feeling nervous.	.39749¤
FACTOR 8: DAILY FASTING EIGENVALUE = 1.68 % VARIANCE = 2.6	
2. Skip breakfast and lunch.	.73552
20. Try to distribute eating over the entire day.	-.62613
45. Try to avoid eating until as late in the day as possible.	.53130
: PERFECTIONISM	
FACTOR 9: PERFECTIONISM EIGENVALUE = 1.50 % VARIANCE = 2.4	
15. I hate being less than the best at things.	.56423
22. Only outstanding performance is good enough in my family.	.52382
26. Have loss of sexual interest or pleasure.	.43643
3. Cut my food into small pieces.	.39917
25. Feel low in energy or slowed down.	.37765

NOTE: The only high loading which appeared on a second factor was 19. "When I look in a mirror I feel bad about food I've recently eaten. which had a loading of .72322 on factor 1 and .30 068 on factor 2.

¤ Pure loading in that there is no other loading of the same sign above 0 .30). Statements 28 and 30 both load on Factors 1 and 7 but the signs of the loadings are opposite.

' The eigenvalue is an index of the meaningfulness of the factor: the higher the eigenvalue the more meaningful the factor.

TABLE 3
PEARSON CORRELATIONS FOR EEQ FACTOR SCORES
(Coefficient / (Cases) / Significance)
399 Subjects

FACTOR SCORE	EAT-26 TOTAL	FAC1 /EAT26	FAC2 /EAT26	FAC3 /EAT26	OB-R CRITER.	CHO CRITER.	RATING WEIGHT	CURRENT DIETING
EEQFC1	.7658	.8808	.3633	-.0986	.2632	.1602	.4223	.5496
	(372)	(372)	(372)	(372)	(372)	(372)	(371)	(369)
	P= .000	P= .000	P= .000	P= .029	P= .000	P= .001	P= .000	P= .000
EEQFC2	.0336	-.0492	.5314	-.3407	.0898	.5772	.1672	.2242
	(372)	(372)	(372)	(372)	(372)	(372)	(371)	(369)
	P= .259	P= .172	P= .000	P= .000	P= .042	P= .000	P= .001	P= .000
EEQFC3	.1864	.1690	.1157	.0890	.7404	-.1890	.0002	.1122
	(372)	(372)	(372)	(372)	(372)	(372)	(371)	(369)
	P= .000	P= .001	P= .013	P= .043	P= .000	P= .000	P= .498	P= .016
EEQFC4	.2719	.1511	.3838	.1782	.1110	.0181	-.0396	.0453
	(372)	(372)	(372)	(372)	(372)	(372)	(371)	(369)
	P= .000	P= .002	P= .000	P= .000	P= .016	P= .364	P= .224	P= .193
EEQFC5	.0144	-.0055	.0636	.0010	-.1098	.1048	.0115	-.1081
	(372)	(372)	(372)	(372)	(372)	(372)	(371)	(369)
	P= .391	P= .458	P= .111	P= .493	P= .017	P= .022	P= .412	P= .019
EEQFC6	.2927	.1191	.2801	.4912	.0809	.0453	-.3165	-.0214
	(372)	(372)	(372)	(372)	(372)	(372)	(371)	(369)
	P= .000	P= .011	P= .000	P= .000	P= .060	P= .192	P= .000	P= .341
EEQFC7	-.0161	-.0293	.0349	-.0142	-.0673	.2806	-.0549	-.0783
	(372)	(372)	(372)	(372)	(372)	(372)	(371)	(369)
	P= .379	P= .287	P= .251	P= .393	P= .098	P= .000	P= .146	P= .067
EEQFC8	-.0652	-.0270	-.0926	-.0719	-.0243	.0816	.2171	.1086
	(372)	(372)	(372)	(372)	(372)	(372)	(371)	(369)
	P= .105	P= .302	P= .037	P= .083	P= .320	P= .058	P= .000	P= .019
EEQFC9	.0274	-.0158	-.1006	.2848	.3099	.2087	-.0839	-.0368
	(372)	(372)	(372)	(372)	(372)	(372)	(371)	(369)
	P= .299	P= .381	P= .026	P= .000	P= .000	P= .000	P= .053	P= .240

TABLE 3
PEARSON CORRELATIONS FOR EEQ FACTOR SCORES
(Coefficient / (Cases) / Significance)
399 Subjects

FACTOR SCORE	DIETING FREQ.	STREN. EXERCISE	RUNNING 10 K	OTHER EXERCISE	FREQ. OTHER EX.	PROP. PRES. WT.	PROP. LOW WT.	PROP. HIGH WT.
EEQFC1	.7296	.3183	.1050	.1160	.2511	.3026	.2943	.3526
	(371)	(371)	(370)	(341)	(340)	(370)	(367)	(371)
	P= .000	P= .000	P= .022	P= .016	P= .000	P= .000	P= .000	P= .000
EEQFC2	.1552	.0438	.0073	-.0672	-.0398	.1805	.1154	.1724
	(371)	(371)	(370)	(341)	(340)	(370)	(367)	(371)
	P= .001	P= .200	P= .445	P= .108	P= .232	P= .000	P= .014	P= .000
EEQFC3	.0998	.4513	.3762	.2349	.3317	-.0130	.0162	.0154
	(371)	(371)	(370)	(341)	(340)	(370)	(367)	(371)
	P= .027	P= .000	P= .000	P= .000	P= .000	P= .402	P= .379	P= .384
EEQFC4	.0250	-.1046	-.0198	-.0262	-.0141	-.0390	-.1274	.0119
	(371)	(371)	(370)	(341)	(340)	(370)	(367)	(371)
	P= .316	P= .022	P= .352	P= .315	P= .397	P= .227	P= .007	P= .410
EEQFC5	-.0887	-.1070	.0022	-.0440	-.1176	-.0536	-.0233	-.1143
	(371)	(371)	(370)	(341)	(340)	(370)	(367)	(371)
	P= .044	P= .020	P= .483	P= .209	P= .015	P= .152	P= .328	P= .014
EEQFC6	-.0132	-.0070	.0847	.0204	.0165	-.3577	-.3501	-.2635
	(371)	(371)	(370)	(341)	(340)	(370)	(367)	(371)
	P= .400	P= .447	P= .052	P= .354	P= .381	P= .000	P= .000	P= .000
EEQFC7	-.0331	-.0681	-.1097	-.0924	-.1687	-.1148	-.0826	-.1225
	(371)	(371)	(370)	(341)	(340)	(370)	(367)	(371)
	P= .262	P= .095	P= .017	P= .044	P= .001	P= .014	P= .057	P= .009
EEQFC8	.0909	-.0518	.0073	.0308	-.0324	.1604	.1343	.1524
	(371)	(371)	(370)	(341)	(340)	(370)	(367)	(371)
	P= .040	P= .160	P= .444	P= .285	P= .276	P= .001	P= .005	P= .002
EEQFC9	-.0032	-.0692	.0635	.0578	.0568	-.0932	-.1153	-.0928
	(371)	(371)	(370)	(341)	(340)	(370)	(367)	(371)
	P= .475	P= .092	P= .111	P= .143	P= .148	P= .037	P= .014	P= .037

TABLE 4
GROUPS FORMED BY USING A CUTOFF SCORE OF 20 ON EAT-26
TOTAL N = 613
(Mean and s.d. reported unless otherwise specified)

Variable	Males			Females		
	All N = 214	Low <20 on EAT26 N = 206	High ≥20 on EAT26 N = 8	All N = 399	Low <20 on EAT26 N = 294	High ≥20 on EAT26 N = 105
EAT 26[1] Total	10.3 4.1	9.9 3.5	21.3 1.3	15.7 9.5	11.0 4.2	28.7 7.9
EAT 26[2] FAC 1	6.4 3.4	6.2 3.0	12.9 5.2	11.1 7.4	7.5 4.0	21.2 5.1
EAT 26[3] FAC 2	0.4 1.0	0.3 1.0	1.3 1.9	1.2 2.7	0.4 0.9	3.5 4.4
EAT 26[4] FAC 3	3.5 2.5	3.4 2.3	7.1 4.6	3.4 2.3	3.2 2.1	4.1 2.7
OB-R[5] Total	5.2 3.6	5.1 3.6	7.9 4.0	4.4 3.6	3.6 2.9	6.5 4.5
CHO[6] Total	6.7 3.0	6.7 3.0	7.0 1.8	6.6 3.7	6.1 3.3	8.2 4.3
PURGE[7] Total	0.1 0.6	0.1 0.5	0.9 1.8	0.3 1.2	0.1 0.6	0.7 2.1
VOM+[7] Total Never to Someti. Often to Always	0. 0.2 100.% 1.%	0. 0. 0.% 0.%	0.4 1.1 88.% 13.%	0.1 0.7 95.% 5.%	0. 0.3 99.% 1.%	0.4 1.3 86.% 15.%

TABLE 4 (continued)

Variable	Males			Females		
	All N = 214	Low <20 on EAT26 N = 206	High ≥20 on EAT26 N = 8	All N = 399	Low <20 on EAT26 N = 294	High ≥20 on EAT26 N = 105
Q61' Vomit after eating	0.01	0.	0.01	0.05	0.	0.05
	0.1	0.	0.1	0.3	0.	0.3
Never to Someti.	100.%	100.%	100.%	97.%	100.%	97.%
Often to Always	0.%	0.%	0.%	1.%	0.%	1.%
LAX•'	0.1	0.1	0.5	0.1	0.1	0.2
Total	0.5	0.5	0.9	0.7	0.6	1.0
Never to Someti.	96.%	97.%	75.%	96.%	97.%	93.%
Often to Always	5.%	3.%	25.%	4.%	3.%	7.%
DIETING'	1.1	1.1	1.0	1.3	1.2	1.7
CURRENTLY	0.2	0.2	0.0	0.5	0.4	0.5
No	94.%	94.%	100.%	69.%	82.%	33.%
Yes	6.%	6.%	0.%	31.%	18.%	67.%
No. Missing	1	0	1	3	3	0
DIETING'	1.5	1.5	1.8	3.2	2.6	4.7
FREQ (1-7)	1.0	1.1	0.7	1.7	1.5	1.6
Ans:• Never	68.%	69.%	38.%	21.%	27.%	5.%
Rarely	21.%	20.%	50.%	23.%	29.%	7.%
Part year	5.%	5.%	13.%	14.%	14.%	11.%
Sev'rl days each mon.	3.%	3.%	0.%	17.%	18.%	16.%
Sev'rl days each week	2.%	2.%	0.%	13.%	9.%	24.%
Every day	1.%	1.%	0.%	9.%	2.%	29.%
Every meal	1.%	0.%	0.%	3.%	1.%	9.%
No. Missing	2	2	0	1	1	0

TABLE 4 (continued)

Variable	Males			Females		
	All N = 214	Low <20 on EAT26 N = 206	High ≥20 on EAT26 N = 8	All N = 399	Low <20 on EAT26 N = 294	High ≥20 on EAT26 N = 105
STRENUOUS[10]	4.3	4.3	4.5	3.9	3.7	4.4
EXERCISE	1.4	1.4	1.6	1.5	1.5	1.3
Ans:• Never	7.%	7.%	0.%	9.%	11.%	3.%
<1/month	6.%	5.%	13.%	13.%	15.%	8.%
1-3/month	13.%	13.%	13.%	18.%	19.%	14.%
Once/week	18.%	18.%	25.%	16.%	16.%	16.%
2-6/per wk	44.%	45.%	25.%	36.%	34.%	44.%
Once/day	10.%	10.%	13.%	7.%	5.%	14.%
>Once/day	2.%	2.%	13.%	1.%	1.%	1.%
No. Missing	0	0	0	1	1	0
RUNNING[11]	1.8	1.8	1.9	1.4	1.3	1.6
10 KILO.	1.2	1.2	1.1	0.8	0.7	1.1
Ans:• Never	57.%	58.%	50.%	76.%	80.%	66.%
<1 /mon.	22.%	22.%	25.%	13.%	12.%	17.%
1-3/month	7.%	7.%	13.%	7.%	7.%	9.%
Once/week	9.%	9.%	13.%	2.%	1.%	3.%
2-6/per wk	4.%	4.%	0.%	2.%	1.%	5.%
Once/day	0.%	0.%	0.%	0.%	0.%	0.%
>Once/day	0.%	0.%	0.%	0.%	0.%	0.%
No. Missing	0	0	0	2	1	1
OTHER	1.9	1.9	1.8	1.8	1.8	1.8
EXERCISE	0.4	0.3	0.5	0.4	0.4	0.3
No	14.%	14.%	25.%	17.%	19.%	13.%
YES[12]	86.%	86.%	75.%	83.%	81.%	87.%
No. Missing	19	19	0	34	26	8
OTHER EX	4.1	4.1	3.8	3.9	3.7	4.4
FREQ.[13]	1.6	1.6	2.1	1.7	1.7	1.6
Ans:• Never	15.%	14.%	25.%	17.%	19.%	13.%
<1 /mon.	4.%	4.%	13.%	7.%	9.%	2.%
1-3/month	6.%	7.%	0.%	10.%	11.%	6.%
Once/week	18.%	19.%	13.%	17.%	20.%	9.%

TABLE 4 (continued)

Variable	Males			Females		
	All N = 214	Low <20 on EAT26 N = 206	High ≥20 on EAT26 N = 8	All N = 399	Low <20 on EAT26 N = 294	High ≥20 on EAT26 N = 105
2-6/week	43.%	44.%	25.%	36.%	32.%	47.%
Once/day	12.%	12.%	25.%	12.%	9.%	22.%
>Once/day	1.%	1.%	0.%	1.%	1.%	0.%
No. Missing	24	24	0	36	28	8
REPORT WT'*	-1.3	-1.2	-2.5	-6.2	-7.1	-3.6
As % of norm	11.4	11.4	11.4	11.7	11.2	12.8
>30% undwt*	0. C%	0. C%	0. C%	0. C%	0. C%	1. C%
>25% undwt	1. C%	1. C%	0. C%	1. C%	1. C%	1. C%
>20% undwt	5. C%	4. C%	13. C%	7. C%	8. C%	5. C%
>15% undwt	10. C%	9. C%	25. C%	21. C%	23. C%	15. C%
>50% ovwt	0. C%	0. C%	0. C%	1. C%	1. C%	0. C%
>30% ovwt	2. C%	2. C%	0. C%	2. C%	2. C%	1. C%
>20% ovwt	4. C%	4. C%	0. C%	4. C%	2. C%	7. C%
>15% ovwt	7. C%	8. C%	0. C%	5. C%	3. C%	10. C%
No. Missing	0	0	0	2	1	1
RATING WT'*	2.9	2.9	3.0	3.4	3.3	3.6
Scale 1-5	0.7	0.7	1.1	0.6	0.6	0.7
Ans:* V. unwt	3.%	3.%	13.%	0.%	0.%	1.%
Underwt	21.%	21.%	13.%	4.%	4.%	4.%
Average	56.%	56.%	38.%	54.%	61.%	32.%
Overwt	20.%	19.%	38.%	38.%	32.%	56.%
Very ovwt	0.%	0.%	0.%	3.%	2.%	7.%
No. Missing	0	0	0	1	1	0
LOWEST WT'*	-7.3	-7.1	-12.2	-13.5	-14.2	-11.5
As % of norm	10.5	10.4	13.0	9.1	8.6	10.1
>35% undwt*	1. C%	1. C%	0. C%	1. C%	0. C%	1. C%
>30% undwt	1. C%	1. C%	13. C%	2. C%	2. C%	1. C%
>25% undwt	6. C%	5. C%	25. C%	7. C%	8. C%	5. C%
>20% undwt	11. C%	10. C%	38. C%	27. C%	29. C%	20. C%
>15% undwt	21. C%	20. C%	38. C%	48. C%	49. C%	46. C%
>20% ovwt	1. C%	1. C%	0. C%	1. C%	0. C%	1. C%
>15% ovwt	2. C%	2. C%	0. C%	1. C%	0. C%	1. C%

TABLE 4 (continued)

Variable	Males			Females		
	All N = 214	Low <20 on EAT26 N = 206	High ≥20 on EAT26 N = 8	All N = 399	Low <20 on EAT26 N = 294	High ≥20 on EAT26 N = 105
No. Missing	1	1	0	6	4	2
HIGHEST WT[17]	2.4	2.4	2.9	0.1	-1.5	4.4
As % of norm	13.4	13.4	12.5	13.4	12.5	15.0
>30% undwt	0. C%	0. C%	0. C%	0. C%	0. C%	1. C%
>25% undwt	0. C%	0. C%	0. C%	1. C%	1. C%	1. C%
>20% undwt	4. C%	3. C%	13. C%	3. C%	4. C%	1. C%
>15% undwt	7. C%	6. C%	13. C%	8. C%	10. C%	3. C%
>50% ovwt	0. C%	0. C%	0. C%	1. C%	0. C%	3. C%
>40% ovwt.	2. C%	2. C%	0. C%	2. C%	1. C%	3. C%
>30% ovwt.	5. C%	5. C%	0. C%	3. C%	2. C%	6. C%
>20% ovwt.	8. C%	9. C%	0. C%	8. C%	5. C%	13. C%
>15% ovwt.	15. C%	15. C%	13. C%	13. C%	9. C%	22. C%
No. Missing	2	2	0	1	1	0
No. ANR[18]	0	0	0	23	0	23
.% of N	0.%	0.%	0.%	6.%	0.%	22.%
No. ANB[19]	0	0	0	19	0	19
.% of N	0.%	0.%	0.%	5.%	0.%	18.%
No. CCHO[20]	32	31	1	78	42	36
.% of N	14.%	15.%	13.%	20.%	14.%	34.%
No. OB-R[21]	21	20	1	38	12	26
.% of N	9.%	10.%	13.%	10.%	4.%	25.%
No. REM[22]	166	160	6	278	241	37
.% of N	74.%	78.%	75.%	70.%	82.%	35.%

NOTE: The EAT-26 (Garner et al., 1982) is the abbreviated 26-item version of the EAT based on a factor analysis of the original (EAT-40). FAC1 is equivalent to the Garner et al. Factor 1: Dieting. FAC2 is equivalent to the Garner et al. Factor 2: Bulimia and food preoccupation. FAC3 is equivalent to the Garner et al. Factor 3: Oral control. OB-R: EEQ subscale based on the clinical data of Yates et al., 1983. CHO: EEQ subscale based on the

Table 4 (continued)

research data of the Wurtmans (J. Wurtman, 1983; R. Wurtman, 1982). PURGE: four itmes which are concerned with vomiting after eating and with using laxatives. VOM: scores on two items on vomiting. VOM Q.: responses on EAT-26 item "Vomit after I have eaten." LAX: scores on the two items on laxative use. WT (weight) Each answer was calculated as a percentage of the normal weight for the subject's reported height (Metropolitan Life Foundation Statistical Bulletin, 1983). RATING WT is the response to survey question: "In your opinion, you are now ...Very underweight, etc." with 5 possible choices. ANR, ANB, CCHO OB-R and REM are the designations for the respective interview selection criteria, restrictive-anorexic-like, bulimic-anorexic-like, carbohydrate-cravers, obligatory-runners, and the remaining subjects.

• Columns do not total to 100% due to rounding errors.
• Cumulative percentage categories are not exhaustive and columns do not total 100%.
[1] Gender, Group, and the Interaction all significant, $P \leq 0.001$.
[2] Gender, Group, and the Interaction all significant, $P \leq .001$.
[3] Group significant $P \leq .001$. Gender and the Interaction significant, $P \leq .01$.
[4] Gender and Group significant, $P \leq .001$, and the Interaction significant, $P \leq .01$.
[5] Group significant, $P \leq .001$. Gender significant, $P \leq .05$.
[6] Group significant, $P \leq .05$.
[7] PURGE = the four EEQ statements on vomiting and laxative use. Group significant, $P \leq .01$. For both VOM & Q61 Group was significant, $P \leq .001$, but for LAX, Group was significant $P=.02$.
[8] Group significant, $P \leq .01$, Gender and the Interaction significant, $P \leq .001$.
[9] Gender, Group, and the Interaction all significant, $P \leq .001$.
[10] None significant.
[11] Gender significant, $P \leq .05$.
[12] None significant.
[13] None significant.
[14] None significant.
[15] Gender significant, $P \leq .001$.
[16] Interaction significant, $P \leq .05$
[17] None significant.
[18] Gender, Group, and the Interaction all significant, $P \leq .001$.
[19] Gender, Group, and the Interaction all significant, $P \leq .01$.
[20] None significant.
[21] None significant.
[22] Group and Interaction significant, $P \leq .001$. Gender significant, $P \leq .01$.

TABLE 5
EATING DISORDER INVENTORY: VARIMAX ROTATED FACTOR MATRIX (FACTOR LOADING)
The EDI Subscale name which is closest to the factor is noted at the head of each column.

VARIABLE	FACTOR 1 Dieting	FACTOR 2 Ineffect-iveness	FACTOR 3 Perfect-ionism	FACTOR 4 Bingeing	FACTOR 5 Intero-ceptive Awareness	FACTOR 6 Interper-sonal Distrust	FACTOR 7 Maturity Fears	FACTOR 8 Other Problems
SEX of subject	.74332†	.12815	-.04343	-.02998	.15590	-.05513	-.12030	.10189
FAC1: EAT-26 Factor 1	.78464†	.00766	.16898	.15193	-.13847	-.05704	-.03978	.31573
FAC2: EAT-26 Factor 2	.42478	.31175	.04863	.49773	.13354	-.05183	.02903	.41702
OB-R: Selection criterion	.15986	-.08266	.62442†	.03158	-.16499	.22996	-.06634	.24906
CHO: Selection criterion	.09875	.26053	.01571	.56662†	.21829	.02140	.10016	-.18807
1 I eat sweets and carbohy-drates without feeling nervous.	-.53917†	-.17892	-.05272	-.07160	.21085	.00308	-.09752	-.18855
2. I think that my stomach is too big.	.65775	.06862	.00424	.35388	-.08324	-.01443	.05526	-.22586
3. I wish that I could return to the security of childhood.	-.01461	.10991	.08481	.21531	.11974	.03951	.66834†	.00881
4. I eat when I am upset.	.52169	.13709	.05508	.24671	.41427	-.06446	-.01465	-.03701
5. I stuff myself with food.	.07152	.06516	.03813	.64497	.30513	.01139	-.02423	.02423
6. I wish that I could be younger.	-.06924	.13141	.14193	.24840	-.06498	.03261	.54580†	-.27827
7. I think about dieting.	.85094†	-.08836	.07985	.22819	.06264	.05812	-.09641	-.00037
8. I get frightened when my feelings are too strong.	.19288	.19880	.08829	.25297	.31079¤	.14994	.01448	-.25898
9. I think that my thighs are too large.	.85840†	.02377	.14840	-.08097	.17334	.05800	.04113	-.05428

Table 5 (Continued)

VARIABLE	FACTOR 1 Dieting	FACTOR 2 Ineffectiveness	FACTOR 3 Perfectionism	FACTOR 4 Bingeing	FACTOR 5 Interoceptive Awareness	FACTOR 6 Interpersonal Distrust	FACTOR 7 Maturity Fears	FACTOR 8 Other Problems
10. I feel ineffective as a person.	.02370	.54843	-.08977	.32599	.11138	.27532	.17099	.12594
11. I feel extremely guilty after overeating.	.84457†	-.01630	.10841	.25297	-.00419	.03070	-.06384	.07099
12. I think that my stomach is just the right size.	-.61657†	-.13183	.05627	-.27083	.03795	-.09590	-.05325	.30411*
13. Only outstanding performance is good enough in my family.	.09059	.02096	.82198†	.07975	-.02695	.12561	.15145	.03309
14. The happiest time in life is when you are a child.	.03762	-.05017	.13424	.00099	-.08295	-.02884	.67673†	.06637
15 I am open about my feelings.	.01116	-.06204	.00286	-.00193	-.20461	-.78867†	.08447	.06480
16. I am terrified of gaining weight.	.82758†	.03080	.25755	.15751	-.00847	-.01697	.00493	.17194
17. I trust others.	-.07416	-.29028	-.02588	-.04874	.07583	-.49798†	-.11792	-.08201
18. I feel alone in the world.	.06458	.45337	.38349	.03817	.24187	.19079	.13140	.19039
19. I feel satisfied with the shape of my body.	-.58654	-.32398	.05727	.08522	-.04897	-.08205	-.09515	.34575
20. I feel generally in control of things in my life.	-.26376	-.51217	-.00640	-.35463	-.01337	-.35049	-.21262	.03083
21. I get confused about what emotion I am feeling.	.08193	.09365	.05690	.24222	.79269†	.10825	.12337	.01828
22. I would rather be an adult than a child.	-.07319	-.12737	.01852	-.02517	-.12325	.01911	-.62826†	.04898
23. I can communicate with others easily.	.06611	-.24038	.12943	-.05994	-.09519	-.68247†	-.15415	-.13835

Table 5 (Continued)

VARIABLE	FACTOR 1 Dieting	FACTOR 2 Ineffectiveness	FACTOR 3 Perfectionism	FACTOR 4 Bingeing	FACTOR 5 Interoceptive Awareness	FACTOR 6 Interpersonal Distrust	FACTOR 7 Maturity Fears	FACTOR 8 Other Problems
24. I wish I were someone else.	.26242	.57399†	.12394	.19062	.06874	.25413	.06232	-.12835
25. I exaggerate or magnify the importance of weight.	.62934†	.06597	.25392	.20680	-.02318	.02110	-.04246	.23293
26. I can clearly identify what emotion I am feeling.	-.14385	-.15645	.01116	-.17982	-.71744†	-.18979	-.10267	-.05938
27. I feel inadequate.	.20023	.72496†	.11158	.23534	.27132	.15728	.12727	.05981
28. I have gone on eating binges where I have felt that I could not stop.	.38696	.09234	.14409	.69798	.25341	.09857	.02550	.20612
29. As a child, I tried very hard to avoid disappointing my parents and teachers.	.23263	.11425	.54381†	-.03932	.14903	-.07496	-.02114	-.05261
30. I have close relationships.	.10194	-.34007	-.07113	.04014	-.01733	-.46299	-.25716	-.01627
31. I like the shape of my buttocks.	-.63271	-.41884	-.03301	.01154	-.23578	-.01292	-.21657	.09534
32. I am preoccupied with the desire to be thinner.	.80259†	.03753	.24681	.24824	.00749	-.01449	.11374	.22458
33. I don't know what's going on inside me.	.19926	.37956	.10676	.29887	.46639	.21474	.18780	.23627
34. I have trouble expressing my emotions to others.	-.06077	.24188	.18990	.05207	.25286	.70898†	.14810	-.02159
35. The demands of adulthood are too great.	-.05306	.37597	.17986	-.00520	.17143	.05887	.57004	.07456
36. I hate being less than best at things.	.06029	-.00529	.78443†	.11041	.04294	.15826	.12926	-.10170

Table 5 (Continued)

VARIABLE	FACTOR 1 Dieting	FACTOR 2 Ineffectiveness	FACTOR 3 Perfectionism	FACTOR 4 Bingeing	FACTOR 5 Interoceptive Awareness	FACTOR 6 Interpersonal Distrust	FACTOR 7 Maturity Fears	FACTOR 8 Other Problems
37. I feel secure about myself.	-.22429	-.60224	-.06675	-.36456	-.10865	-.27349	-.08581	.05186
38. I think about binging (overeating).	.44840	.15616	.02675	.55849	.22999	.09161	-.02888	.23674
39. I feel happy that I am not a child anymore.	-.09642	-.02910	.01545	-.09396	-.03873	-.10680	-.72572†	.02416
40. I get confused as to whether or not I am hungry.	.37219	.11243	.18079	.28325	.36063	.24841	.04221	.12986
41. I have a low opinion of myself.	.16915	.78219†	.08465	.02489	.10918	.04019	-.03338	.17584
42. I feel that I can achieve my standards.	-.11977	-.73012†	.08938	.02573	.10705	-.00868	-.26704	.13637
43. My parents have expected excellence of me.	.07569	.08299	.74360†	.03757	.10008	.00496	.08042	.01559
44. I worry that my feelings will get out of control.	.04355	.34163	.19253	.49557	.10157	.07131	.25538	-.03566
45. I think my hips are too big.	.85695†	.05909	.09673	-.03966	.09504	.09439	.07306	-.04352
46. I eat moderately in front of others and stuff myself when they're gone.	.44461	.08906	.15889	.53103	.23914	.12428	.03889	.15472
47. I feel bloated after eating a small meal.	.32514	.11534	-.00520	.08987	.09897	.17581	.07095	.51530
48 I feel that people are happiest when they are children.	-.00692	.05381	.28071	-.12214	.10458	-.07388	.52693†	.15982

Table 5 (Continued)

VARIABLE	FACTOR 1 Dieting	FACTOR 2 Ineffectiveness	FACTOR 3 Perfectionism	FACTOR 4 Bingeing	FACTOR 5 Interoceptive Awareness	FACTOR 6 Interpersonal Distrust	FACTOR 7 Maturity Fears	FACTOR 8 Other Problems
49. If I gain a pound, I worry that I will keep gaining.	.83070†	.07390	.16020	.12106	.06334	-.04050	-.00320	.19320
50. I feel that I am a worthwhile person.	-.22445	-.66492†	.04404	-.17327	-.18745	-.22061	.02764	-.09101
51. When I am upset, I don't know if I am sad, frightened or angry.	.10621	.06636	.14433	.25650	.69367†	.29132	.11026	.03246
52. I feel that I must do things perfectly or not do them at all.	.15596	.16768	.73027†	.23641	.05720	.12854	.04357	-.10568
53. I have the thought of trying to vomit in order to lose weight.	.48678	.21797	.18289	.25609	.05563	.02494	.13553	.47781
54. I need to keep people at a certain distance (feel uncomfortable if someone tries to get too close).	.13098	.04894	.25349	.13811	.14328	.52138†	-.05576	.08934
55. I think that my thighs are just the right size.	-.65986	-.21064	.06881	.14399	-.40051	-.03168	-.07669	.06242
56. I feel empty inside (emotionally).	.03374	.42346	.23949	.19239	.31102	.26391	.14040	.40412
57. I can talk about personal thoughts or feelings.	-.04487	-.01100	-.10649	-.01254	-.26417	-.77442†	.05713	.05863
58. The best years of your life are when you become an adult.	-.08639	-.08891	.11254	.14200	-.03855	-.24017	-.63275†	-.09386
59. I think my buttocks are too large.	.83778†	.15469	.08079	-.00172	.14627	.08026	.07284	-.02554

Table 5 (Continued)

VARIABLE	FACTOR 1 Dieting	FACTOR 2 Ineffect-iveness	FACTOR 3 Perfect-ionism	FACTOR 4 Bingeing	FACTOR 5 Intero-ceptive Awareness	FACTOR 6 Interper-sonal Distrust	FACTOR 7 Maturity Fears	FACTOR 8 Other Problems
60. I have feelings I can't quite identify.	.10554	.11256	.02934	.20624	.70459	.33494	.04259	.03553
61. I eat or drink in secrecy.	.46451	.24070	.06947	.48245	.26995	.10802	.05512	.27055
62. I think that my hips are just the right size.	-.74531╫	-.27552	.02615	.07304	-.28195	-.03511	-.16885	.15871
63. I have extremely high goals.	.16972	-.08544	.74073╫	-.03046	.03356	-.11590	.11855	.12205
64. When I am upset, I worry that I will start eating.	.61628	.20917	.17141	.42307	.31988	-.03611	-.03236	.14044
EIGENVALUES[1]	19.20	7.09	4.13	3.49	2.67	2.37	1.87	1.67
% VARIANCE	27.8	10.3	6.0	5.1	3.9	3.4	2.7	2.4

[1] The eigenvalue is an index of the meaningfulness of the factor: the higher the eigenvalue the more meaningful the factor.

╫ Pure loading higher than .75 (i.e. no other loadings of the same sign above .30).

╫ Pure loading from .45 to .74 (i.e. no other loadings of the same sign above .30).

Pure loading from .30 to .44 (i.e. no other loadings of the same sign above .30).

TABLE 6
INTERVIEW SUBJECTS RESPONSES TO THE EDI AND OTHER QUESTIONNAIRES
Columns are interview subgroups. Mean and s.d. reported unless otherwise specified. N per group = 15.

Variable	Male Groups			Female Groups				
	NORMAL All Lower	OBLI. R. ≥10 on OB-R	CHO CRAV. ≥10 on CHO	NORMAL All Lower	OBLI. R. ≥10 on OB-R	CHO CRAV. ≥10 on CHO	ANR-LIKE ≥29 on EAT26 & ≤7 on FAC2	ANB-LIKE ≥29 on EAT26 & >7 on FAC2
EDI Thinness	0.3¤ 0.9	1.9¤⁺ 2.3	1.1¤ 1.5	1.1¤¹ 1.6	8.7⁻ᶦᵎ 5.8	5.6⁺⁻ᶦ 6.0	12.9ᵎ 5.2	13.1ᵎ 6.0
EDI Bulimia	0.1¤ 0.3	0.8¤⁺ 1.3	1.2¤⁺⁻ 1.8	0.2¤¹ 0.6	2.3⁺⁻¹ 2.7	3.1⁻¹ 3.5	1.9¹ 2.3	7.7ᵎ 6.2
EDI Bdy Dis	2.8¤ 4.2	3.0¤ 4.4	4.3¤ 4.0	6.6¤⁺¹ 6.0	13.5⁻ᵎ 8.7	11.3⁺⁻¹ᵎ 5.4	15.7ᵎ 8.1	17.4ᵎ 8.4
EDI Ineffectv	0.8¤ 1.3	2.3¤⁺ 3.7	2.8¤⁺ 3.8	0.5¤¹ 1.1	2.2¤⁺¹ᵎ 4.0	4.4⁺¹ᵎ 2.9	2.9¹ᵎ 3.8	5.9ᵎ 6.5
EDI Perfectn	3.9¤ 3.4	10.7⁺ 4.1	5.5¤ 4.3	3.7¤¹ 3.9	10.6⁺ᵎ 5.2	6.5¤⁺¹ᵎ 4.5	8.2ᵎ 5.9	8.7ᵎ 5.3
EDI Distrus	1.2¤ 1.4	4.4⁺ 3.9	2.9¤⁺ 2.9	1.5¤⁺¹ 1.6	3.1¤⁺¹ 3.6	4.0¤⁺¹ 3.5	2.0¹ 2.0	3.6¹ 4.1
EDI Int Awar	0.4¤ 1.1	1.3¤⁺ 2.4	2.5¤⁺ 3.1	0.1¤¹ 0.4	3.5⁺ᵎ 4.6	4.0⁺ᵎ 3.4	2.7¹ᵎ 3.3	6.4ᵎ 5.4
EDI Mat Fear	2.2¤ 2.0	2.6¤ 2.8	3.3¤ 4.9	2.4¤¹ 2.6	1.6¤¹ 1.8	1.9¤¹ 2.1	2.5¹ 3.5	2.7¹ 2.1
INT RATED AN-LIKE	1.0¤ 0.	1.0¤ 0.	1.3¤ 0.6	1.0¤¹ 0.	1.9⁺ᵎ 1.0	1.3¹ᵎ 0.6	3.1ᵎ 1.0	3.5ᵎ 1.2
No Prob.	100.%	100.%	80.%	100.%	60.%	80.%	0.%	0.%
Restrict.	0.%	0.%	20.%	0.%	0.%	20.%	40.%	33.%
Purg. Rstr	0.%	0.%	0.%	0.%	40.%	0.%	20.%	7.%

TABLE 6 (continued)
INTERVIEW SUBJECTS RESPONSES TO THE EDI ETC.

Variable	Male Groups			Female Groups				
	NORMAL All Lower	OBLI. R. ≥10 on OB-R	CHO CRAV. ≥10 on CHO	NORMAL All Lower	OBLI. R. ≥10 on OB-R	CHO CRAV. ≥10 on CHO	ANR-LIKE ≥29 on EAT26 & ≤7 on FAC2	ANB-LIKE ≥29 on EAT26 & >7 on FAC2
Fast. Rstr	0.%	0.%	0.%	0.%	0.%	0.%	33.%	40.%
MD Diagnos	0.%	0.%	0.%	0.%	0.%	0.%	7.%	20.%
CRS	6.4¤+	8.2¤+-	13.2	6.0¤¹	11.7+-¹	12.5-¹	11.5¹	13.1¹
Total	4.6	3.5	6.1	5.6	6.9	7.0	7.7	9.8
<10	75.%	67.%	33.%	93.%	47.%	33.%	47.%	53.%
≥10 but <14	20.%	27.%	20.%	0.%	13.%	13.%	27.%	13.%
≥14	7.%	7.%	47.%	7.%	40.%	53.%	27.%	33.%
INT RATED	0.1¤	0.¤	0.¤	0.¤¹	0.¤¹	0.2¤¹²	0.¹	0.8²
DEP	0.5	0.	0.	0.	0.	0.8	0.	1.4
No prob.	93.%	100.%	100.%	100.%	100.%	93.%	100.%	73.%
Obvious	7.%	0.%	0.%	0.%	0.%	7.%	0.%	27.%
PSYCI	1.1¤	1.0¤	1.1¤	1.0¤¹	1.1¤¹	1.1¤¹	1.1¹	1.3¹
PAST PT	0.3	0.	0.4	0.	0.3	0.3	0.4	0.5
No	93.%	100.%	87.%	100.%	93.%	93.%	87.%	67.%
Yes	7.%	0.%	13.%	0.%	7.%	7.%	13.%	33.%
INT RT	1.0¤	1.0¤	1.2¤	1.0¤¹	1.3¤¹²	1.3¤¹²	1.2¹²	1.6²
BINGER	0.	0.	0.4	0.	0.5	0.5	0.4	0.5
No	100.%	100.%	80.%	100.%	73.%	67.%	80.%	40.%
Yes	0.%	0.%	20.%	0.%	27.%	33.%	20.%	60.%
SLF RT	1.0¤	1.0¤	1.2¤	1.0¤¹	1.3¤¹²	1.2¤¹	1.2¹	1.7²
BINGER	0.	0.	0.4	0.	0.5	0.4	0.4	0.5
No	100.%	100.%	80.%	100.%	73.%	80.%	80.%	33.%
Yes	0.%	0.%	20.%	0.%	27.%	20.%	20.%	67.%
BINGE	1.0¤	1.0¤	1.1¤	1.1¤¹	1.5+¹	1.1¤¹	1.3¹	1.7²
URGES	0.	0.	0.3	0.3	0.5	0.4	0.5	0.5
No	100.%	100.%	93.%	93.%	53.%	87.%	73.%	33.%
Yes	0.%	0.%	7.%	7.%	47.%	13.%	27.%	67.%
EVER	1.3¤	1.7¤+-	1.9	1.4¤+¹	1.8+-¹²	1.6¤+¹²	1.5¹²	1.9²
BINGE	0.5	0.5	0.4	0.5	0.4	0.5	0.5	0.3
No	67.%	27.%	13.%	60.%	20.%	40.%	47.%	7.%

TABLE 6 (continued)
INTERVIEW SUBJECTS RESPONSES TO THE EDI ETC.

Variable	Male Groups			Female Groups				
	NORMAL All Lower	OBLI. R. ≥10 on OB-R	CHO CRAV. ≥10 on CHO	NORMAL All Lower	OBLI. R. ≥10 on OB-R	CHO CRAV. ≥10 on CHO	ANR-LIKE ≥29 on EAT26 & ≤7 on FAC2	ANB-LIKE ≥29 on EAT26 & >7 on FAC2
Yes	33.%	73.%	87.%	40.%	80.%	60.%	53.%	98.%
FEAR NOT	1.0¤	1.1¤	1.1¤	1.0¤[1]	1.3¤[1,2]	1.2¤[1]	1.3[1,2]	1.7[2]
STOP BNG	0.	0.3	0.4	0.	0.5	0.4	0.5	0.5
No	100.%	93.%	87.%	100.%	67.%	80.%	73.%	27.%
Yes	0.%	7.%	13.%	0.%	33.%	20.%	27.%	73.%
VOMIT	1.0¤	1.0¤	1.0¤	1.0¤[1]	1.1¤[1]	1.0¤[1]	1.2[1,2]	1.5[2]
AFT BNG	0.	0.	0.	0.	0.4	0.	0.4	0.5
No	100.%	100.%	100.%	100.%	87.%	100.%	80.%	47.%
Yes	0.%	0.%	0.%	0.%	13.%	0.%	20.%	53.%
INT VOMIT	1.0¤	1.0¤	1.0¤	1.0¤[1]	1.3[+1]	1.0¤[1]	1.3[1]	1.6[2]
WT LOSS	0.	0.	0.	0.	0.5	0.	0.5	0.5
No	100.%	100.%	100.%	100.%	73.%	100.%	73.%	40.%
Yes	0.%	0.%	0.%	0.%	27.%	0.%	27.%	60.%
VOMITING	1.0¤	1.0¤	1.0¤	1.0¤[1]	1.2[+1]	1.0¤[1]	1.5[1]	2.9[2]
FREQ.	0.	0.	0.	0.	0.4	0.	1.2	2.1
Ans.: Never	100.%	100.%	100.%	100.%	80.%	100.%	80.%	40.%
<1 /mon.	0.%	0.%	0.%	0.%	20.%	0.%	0.%	13.%
1-3/month	0.%	0.%	0.%	0.%	0.%	0.%	13.%	13.%
Once/week	0.%	0.%	0.%	0.%	0.%	0.%	0.%	7.%
2-6/week	0.%	0.%	0.%	0.%	0.%	0.%	7.%	13.%
Once/day	0.%	0.%	0.%	0.%	0.%	0.%	0.%	7.%
>Once/day	0.%	0.%	0.%	0.%	0.%	0.%	0.%	7.%
LAX	1.0¤	1.0¤	1.1¤	1.0¤[1]	1.4¤[1,2]	1.1¤[1,2]	1.3[1,2]	2.1[2]
FREQ	0.	0.	0.3	0.	1.3	0.4	0.7	1.8
Ans.: Never	100.%	100.%	93.%	100.%	86.%	87.%	80.%	60.%
<1 / mon.	0.%	0.%	7.%	0.%	7.%	13.%	7.%	13.%
1-3/month	0.%	0.%	0.%	0.%	0.%	0.%	13.%	7.%
Once/week	0.%	0.%	0.%	0.%	0.%	0.%	0.%	0.%
2-6/week	0.%	0.%	0.%	0.%	0.%	0.%	0.%	13.%
Once/day	0.%	0.%	0.%	0.%	7.%	0.%	0.%	7.%
>Once/day	0.%	0.%	0.%	0.%	0.%	0.%	0.%	0.%

TABLE 6 (continued)
INTERVIEW SUBJECTS RESPONSES TO THE EDI ETC.

Variable	Male Groups			Female Groups				
	NORMAL All Lower	OBLI. R. ≥10 on OB-R	CHO CRAV. ≥10 on CHO	NORMAL All Lower	OBLI. R. ≥10 on OB-R	CHO CRAV. ≥10 on CHO	ANR-LIKE ≥29 on EAT26 & ≤7 on FAC2	ANB-LIKE ≥29 on EAT26 & >7 on FAC2
DIET PILL	1.0¤	1.0¤	1.0¤	1.0¤[1]	1.3+[1]	1.1¤+[1]	1.2[1]	1.9[1]
FREQ	0.	0.	0.	0.	0.6	0.3	0.6	2.1
Ans.†: Never	100.%	100.%	100.%	100.%	80.%	93.%	87.%	73.%
<1 / mon.	0.%	0.%	0.%	0.%	13.%	7.%	7.%	13.%
1-3/month	0.%	0.%	0.%	0.%	7.%	0.%	7.%	0.%
Once/week	0.%	0.%	0.%	0.%	0.%	0.%	0.%	0.%
2-6/week	0.%	0.%	0.%	0.%	0.%	0.%	0.%	0.%
Once/day	0.%	0.%	0.%	0.%	0.%	0.%	0.%	0.%
>Once/day	0.%	0.%	0.%	0.%	0.%	0.%	0.%	13.%
DIETING	1.0¤	1.0¤	1.0¤	1.1¤[1]	1.5+[2,3]	1.2¤+[1,2]	1.8[3,4]	2.0[4]
AT SURVEY	0.	0.	0.	0.3	0.5	0.4	0.4	0.
No	100.%	100.%	100.%	93.%	47.%	80.%	20.%	0.%
-Yes	0.%	0.%	0.%	7.%	53.%	20.%	80.%	100.%
DIET'G AT	1.0¤	1.2¤+	1.1¤+	1.1¤+[1]	1.4+[1,2,3]	1.3¤+[1,2]	1.7[2,3]	1.8[3]
INTERVIEW	0.0	0.4	0.4	0.3	0.5	0.5	0.5	0.4
No	100.%	80.%	87.%	93.%	60.%	73.%	20.%	20.%
-Yes	0.%	20.%	13.%	7.%	40.%	27.%	80.%	80.%
DIET FREQ.	1.1¤	1.2¤	1.7¤	2.0¤[1]	4.1+[2]	3.4+[2]	5.5[3]	5.5[3]
(Survey Q)	0.4	0.4	0.9	1.2	1.5	1.5	0.9	1.1
Ans.†: Nev.	87.%	80.%	53.%	47.%	0.%	20.%	0.%	0.%
Rarely	13.%	20.%	33.%	27.%	13.%	7.%	0.%	0.%
Part year	0.%	0.%	7.%	7.%	20.%	13.%	7.%	7.%
Sev'rl d. each mon.	0.%	0.%	7.%	20.%	33.%	40.%	7.%	7.%
Sev'rl d. each wk	0.%	0.%	0.%	0.%	13.%	13.%	20.%	40.%
Every day	0.%	0.%	0.%	0.%	13.%	7.%	67.%	27.%
Evr. meal	0.%	0.%	0.%	0.%	7.%	0.%	0.%	20.%
DIET RULES††								
Own diet	7.%	20.%	0.%	27.%	67.%	27.%	80.%	60.%
Moderate	0.%	27.%	33.%	13.%	27.%	27.%	13.%	40.%
None	93.%	53.%	67.%	60.%	7.%	47.%	7.%	0.%

TABLE 6 (continued)
INTERVIEW SUBJECTS RESPONSES TO THE EDI ETC.

Variable	Male Groups			Female Groups				
	NORMAL All Lower	OBLI. R. ≥10 on OB-R	CHO CRAV. ≥10 on CHO	NORMAL All Lower	OBLI. R. ≥10 on OB-R	CHO CRAV. ≥10 on CHO	ANR-LIKE ≥29 on EAT26 & ≤7 on FAC2	ANB-LIKE ≥29 on EAT26 & >7 on FAC2
AVOID CHO	1.3¤2	1.5¤²	1.0¤	1.2¤¹	1.9⁺²³	1.5¤⁺¹²	2.5³	2.3³
(Scale 1-4)	0.5	0.6	0.	0.6	0.9	0.7	0.5	0.8
CONSUME CHO	3.7⁺	3.3¤⁺	3.9⁺	3.5¤⁺³	2.9¤²³	3.3¤⁺³	2.1¹	2.5¹²
(Scale 1-4)	0.5	1.0	0.4	0.7	0.6	1.0	0.5	1.0
EAT BKFST	5.6¤	4.9¤	3.9¤	6.2¤¹	3.9¤¹	5.1¤¹	5.0¹	5.1¹
PER WK	2.1	2.7	2.2	1.5	2.4	2.3	2.7	2.3
STREN. EX.	4.1¤⁺⁻	5.3⁻	4.0¤⁺⁻	3.7¤⁺¹³	5.0⁺⁻²	3.5¤¹	4.8¹²	4.7¹²
(Survey Q.)	1.6	0.8	1.3	1.7	1.0	1.6	1.4	1.0
Ans.†: Never	7.%	0.%	7.%	13.%	0.%	13.%	0.%	0.%
<1/month	0.%	0.%	7.%	13.%	0.%	20.%	13.%	0.%
1-3/month	40.%	0.%	13.%	20.%	13.%	20.%	0.%	20.%
Once/week	7.%	13.%	27.%	7.%	0.%	7.%	13.%	7.%
2-6/per wk	27.%	53.%	47.%	34.%	67.%	33.%	47.%	53.%
Once/day	13.%	27.%	0.%	13.%	13.%	7.%	20.%	20.%
>Once/day	7.%	7.%	0.%	0.%	7.%	0.%	7.%	0.%
RUNNING	1.7¤⁺⁻	2.5⁻	1.1¤	1.9¤⁺⁻¹	2.2⁺⁻¹	1.2¤⁺¹	1.8¹	1.6¹
10K (Surv.)	1.0	1.2	0.4	1.1	1.5	0.4	1.3	1.2
Ans†: Never	60.%	27.%	87.%	53.%	53.%	80.%	67.%	73.%
<1/month	27.%	20.%	13.%	13.%	7.%	20.%	7.%	13.%
1-3/month	0.%	27.%	0.%	27.%	20.%	0.%	13.%	0.%
Once/week	13.%	27.%	0.%	7.%	7.%	0.%	7.%	7.%
2-6/week	0.%	0.%	0.%	0.%	13.%	0.%	7.%	7.%
Once/day	0.%	0.%	0.%	0.%	0.%	0.%	0.%	0.%
>Once/day	0.%	0.%	0.%	0.%	0.%	0.%	0.%	0.%
OTH. EX.	1.7¤	2.0¤	1.7¤	1.9¤¹	1.9¤¹	1.7¤¹	1.9¹	1.9¹
(Surv.)	0.5	0.0	0.5	0.4	0.3	0.5	0.3	0.4
No	33.%	0.%	33.%	13.%	7.%	27.%	7.%	13.%
Yes	67.%	100.%	67.%	87.%	93.%	73.%	93.%	87.%

TABLE 6 (continued)
INTERVIEW SUBJECTS RESPONSES TO THE EDI ETC.

Variable	Male Groups			Female Groups				
	NORMAL All Lower	OBLI. R. ≥10 on OB-R	CHO CRAV. ≥10 on CHO	NORMAL All Lower	OBLI. R. ≥10 on OB-R	CHO CRAV. ≥10 on CHO	ANR-LIKE ≥29 on EAT26 & ≤7 on FAC2	ANB-LIKE ≥29 on EAT26 & >7 on FAC2
OTHER EX.	3.3¤	4.7¤	3.3¤	4.1¤[1]	4.7¤[1]	3.5¤[1]	4.8[1]	4.5[1]
FREQ (Sur.)	1.9	1.4	2.1	1.7	1.2	1.9	1.2	1.6
Ans: Never	33.%	0.%	36.%	13.%	7.%	27.%	7.%	13.%
<1/ mon.	0.%	14.%	7.%	7.%	0.%	7.%	0.%	0.%
1-3/month	13.%	7.%	7.%	14.%	7.%	13.%	0.%	7.%
Once/week	20.%	0.%	7.%	13.%	0.%	13.%	13.%	13.%
2-6/week	20.%	50.%	29.%	33.%	80.%	27.%	60.%	40.%
Once/day	13.%	29.%	14.%	20.%	7.%	13.%	20.%	27.%
>Once/day	0.%	0.%	0.%	0.%	0.%	0.%	0.%	0.%
Missing	0.	1.	1.	0.	0.	0.	0.	0.
SPORTS	5.0¤	9.5[+]	3.1¤	3.5¤[1]	6.0¤[+12]	2.5¤[1]	7.5[2]	6.1[12]
HOURS/WK	4.1	5.6	3.2	2.9	2.9	2.2	5.7	4.6
SPORTS	2.8¤[+]	2.0¤	3.2[+]	2.8¤[+12]	2.2¤[+1]	3.3[+2]	2.2[1]	2.4[12]
INTENSIY	1.5	0.7	0.9	1.3	0.9	1.2	0.9	0.9
(1 is extrm)								
LIVING W.	1.0¤	1.0¤	1.0¤	1.0¤[1]	1.1¤[+1]	1.3[+1]	1.1[1]	1.1[1]
SEX MATE	0.	0.	0.	0.	0.3	0.5	0.3	0.4
No	100.%	100.%	100.%	100.%	93.%	73.%	93.%	87.%
Yes	0.%	0.%	0.%	0.%	7.%	27.%	7.%	13.%
MISSED MEN.	NA	NA	NA	1.2[1]	1.3[1]	1.3[1]	1.5[1]	1.7[1]
HISTORY	NA	NA	NA	0.4	0.5	0.5	0.5	0.5
No	NA	NA	NA	80.%	67.%	67.%	47.%	33.%
-Yes	NA	NA	NA	20.%	33.%	33.%	53.%	67.%
MISSED MEN.				0.4[1]	0.9[1]	1.1[1]	1.7[1]	1.9[1]
FREQ				0.9	1.3	1.7	1.7	1.5
Not mis.	NA	NA	NA	80.%	67.%	67.%	47.%	33.%
Menarche	NA	NA	NA	7.%	0.%	0.%	0.%	0.%
Once	NA	NA	NA	7.%	13.%	13.%	7.%	27.%
Sev'rl	NA	NA	NA	7.%	20.%	0.%	33.%	33.%

TABLE 6 (continued)
INTERVIEW SUBJECTS RESPONSES TO THE EDI ETC.

Variable	Male Groups			Female Groups				
	NORMAL All Lower	OBLI. R. ≥10 on OB-R	CHO CRAV. ≥10 on CHO	NORMAL All Lower	OBLI. R. ≥10 on OB-R	CHO CRAV. ≥10 on CHO	ANR-LIKE ≥29 on EAT26 & ≤7 on FAC2	ANB-LIKE ≥29 on EAT26 & >7 on FAC2
Usually	NA	NA	NA	0.%	0.%	20.%	13.%	7.%
MAX LOSS	5.2¤	6.6¤	7.6¤+	7.0¤+¹	12.4+¹	9.7¤+¹	12.4¹	11.1¹
WT/MON	4.2	4.1	6.1	4.7	7.4	5.3	7.1	5.1
RATING WT.	2.8¤	2.7¤	2.9¤	3.1¤+¹	3.8+²	3.3¤+¹²	3.6¹²	3.7¹²
(Survey)	0.4	0.7	1.0	0.5	0.6	0.8	0.7	0.7
Ans†: V. unwt	0.%	7.%	13.%	0.%	0.%	7.%	0.%	0.%
Underwt	20.%	27.%	13.%	7.%	0.%	0.%	7.%	7.%
Average	80.%	60.%	47.%	80.%	27.%	47.%	33.%	27.%
Overwt	0.%	7.%	27.%	13.%	67.%	47.%	53.%	60.%
Very ovwt	0.%	0.%	0.%	0.%	7.%	0.%	7.%	7.%
Missing	0.	0.	0.	0.	0.	0.	0.	0.
SCALE WT.	-1.5¤	-1.5¤	0.9¤	-5.7¤¹	5.3¤¹	-4.5¤¹	-0.1¹	6.6¹
PROP.	10.6	7.0	18.0	11.9	8.9	11.2	12.6	27.7
w/n 10% norm▪	60.%	80.%	53.%	60.%	73.%	73.%	60.%	60.%
>30% undwt	0. C%	0. C%	0. C%	0. C%	0. C%	7. C%	0. C%	0. C%
>25% undwt	0. C%	0. C%	13. C%	0. C%	0. C%	7. C%	0. C%	0. C%
>20% undwt	0. C%	0. C%	13. C%	20. C%	0. C%	7. C%	0. C%	7. C%
>15% undwt	7. C%	0. C%	27. C%	20. C%	0. C%	13. C%	0. C%	7. C%
>40% ovwt	0. C%	0. C%	0. C%	0. C%	0. C%	0. C%	0. C%	7. C%
>30% ovwt	0. C%	0. C%	7. C%	0. C%	0. C%	0. C%	0. C%	13. C%
>20% ovwt	7. C%	0. C%	13. C%	7. C%	13. C%	0. C%	13. C%	20. C%
>15% ovwt	13. C%	0. C%	13. C%	7. C%	27. C%	0. C%	20. C%	20. C%
HIGHEST WT.	0.4¤	0.8¤	5.3¤	-0.4¤¹	5.7¤¹²	-2.0¤¹	2.6¹²	15.0¹
PROP.	10.6	6.2	18.9	11.1	8.1	11.6	11.7	25.5
>25% undwt▪	0. C%	0. C%	0. C%	0. C%	0. C%	7. C%	0. C%	0. C%
>20% undwt	0. C%	0. C%	7. C%	0. C%	0. C%	7. C%	0. C%	0. C%
>15% undwt	7. C%	0. C%	20. C%	7. C%	0. C%	13. C%	0. C%	0. C%

TABLE 6 (continued)
INTERVIEW SUBJECTS RESPONSES TO THE EDI ETC.

Variable	Male Groups			Female Groups				
	NORMAL All Lower	OBLI. R. ≥10 on OB-R	CHO CRAV. ≥10 on CHO	NORMAL All Lower	OBLI. R. ≥10 on OB-R	CHO CRAV. ≥10 on CHO	ANR-LIKE ≥29 on EAT26 & ≤7 on FAC2	ANB-LIKE ≥29 on EAT26 & >7 on FAC2
>50% ovwt	0. C%	0. C%	0. C%	0. C%	0. C%	0. C%	0. C%	7. C%
>35% ovwt	0. C%	0. C%	7. C%	0. C%	0. C%	0. C%	0. C%	13. C%
>30% ovwt	0. C%	0. C%	13. C%	0. C%	0. C%	0. C%	0. C%	13. C%
>20% ovwt	7. C%	0. C%	27. C%	7. C%	7. C%	0. C%	7. C%	20. C%
>15% ovwt	14. C%	0. C%	27. C%	13. C%	7. C%	7. C%	20. C%	47. C%
LOWEST WT.	-7.7¤	-9.0¤	-6.8¤	-11.6¤[1]	-8.2¤[1]	-14.0¤[1]	-11.6[1]	-11.8[1]
PROP.	8.2	7.5	12.8	10.3	7.2	9.5	13.3	9.2
>35% undwt•	0. C%	0. C%	0. C%	0. C%	0. C%	7. C%	7. C%	0. C%
>30% undwt	0. C%	7. C%	7. C%	0. C%	0. C%	7. C%	7. C%	0. C%
>25% undwt	0. C%	7. C%	13. C%	0. C%	0. C%	13. C%	7. C%	0. C%
>20% undwt	0. C%	7. C%	20. C%	33. C%	0. C%	27. C%	27. C%	27. C%
>15% undwt	21. C%	7. C%	33. C%	47. C%	20. C%	33. C%	53. C%	40. C%
>15% ovwt	0. C%	0. C%	0. C%	7. C%	0. C%	0. C%	0. C%	0. C%
>10% ovwt	7. C%	0. C%	0. C%	7. C%	0. C%	0. C%	13. C%	0. C%
IDEAL WT.	2.1[-]	-2.1[+-]	1.7[-]	-10.2¤[1]	-7.7¤[+1]	-10.8¤[1]	-12.4[1]	-10.8[1]
PROP.	8.0	5.4	12.8	7.6	5.4	6.9	6.0	8.0
>20% undwt•	0. C%	0. C%	7. C%	0. C%	0. C%	13. C%	7. C%	7. C%
>15% undwt	0. C%	0. C%	7. C%	40. C%	7. C%	20. C%	47. C%	33. C%
>15% ovwt	14. C%	0. C%	7. C%	0. C%	0. C%	0. C%	0. C%	0. C%
Missing	0	1	1	0	0	0	0	0
MZR WT AS	0.5¤[+]	0.4¤[+]	-0.2¤	3.1¤[+-1]	6.3[-1]	4.2[+-1]	6.4[1]	5.8[1]
% REP WT	2.7	2.7	4.5	5.2•	5.1•	3.9•	5.7•	14.5•
EAT-26	7.1¤	12.7[+-]	8.9¤[+-]	8.1¤[-1]	19.7[-2]	13.5[-1,2]	35.7[3]	40.6[3]
Total	2.7	4.7	4.5	1.7	6.7	7.9	4.2	9.0
EAT-26	4.5¤	8.2¤	4.5¤	4.7¤[1]	15.8[+2]	8.5¤[3]	26.9[4]	24.7[4]
FAC 1	1.3	4.1	3.8	1.2	6.7	6.4	3.3	4.8
EAT-26	0.¤	0.4¤	0.7¤[+]	0.2¤[1]	0.9¤[+1]	2.3[+1]	2.1[1]	12.0[2]

TABLE 6 (continued)
INTERVIEW SUBJECTS RESPONSES TO THE EDI ETC.

Variable	Male Groups			Female Groups				
	NORMAL All Lower	OBLI. R. ≥10 on OB-R	CHO CRAV. ≥10 on CHO	NORMAL All Lower	OBLI. R. ≥10 on OB-R	CHO CRAV. ≥10 on CHO	ANR-LIKE ≥29 on EAT26 & ≤7 on FAC2	ANB-LIKE ≥29 on EAT26 & >7 on FAC2
FAC 2	0.	0.9	1.6	0.6	1.4	3.1	2.0	3.4
EAT-26	2.6¤	4.1¤	3.6¤	3.2¤[1]	2.9¤[1]	2.7¤[1]	6.7[2]	3.9[1]
FAC 3	2.0	3.2	2.1	1.8	2.1	2.8	2.1	3.3
OB-R	2.9¤[+]	13.7[•]	5.3[-]	2.3¤[1]	14.1[•+4]	4.7[+-1 2]	7.0[2 3]	9.0[3]
(EEQ)	1.5	2.5	3.2	1.5	1.8	3.3	4.1	5.3
CHO	4.7¤[+]	6.8[+]	13.1[-]	4.1¤[1]	6.1¤[+1 2]	15.4[-4]	7.7[2]	11.8[3]
(EEQ)	2.1	2.4	1.9	1.6	3.7	2.5	3.6	4.5
PURGE	0.¤	0.¤	0.1¤	0.¤[1]	0.1¤[1]	0.¤[1]	0.3[1]	3.8[2]
(EEQ)	0.	0.	0.3	0.	0.5	0.	1.0	4.3
EEQ Q61	0.¤	0.¤	0.¤	0.¤[1]	0.¤[1]	0.¤[1]	0.[1]	1.3[2]
Vom. aft eating.	0.	0.	0.	0.	0.	0.	0.	1.3
Never	100.%	100.%	100.%	100.%	100.%	100.%	100.%	40.%
Rarely	0.%	0.%	0.%	0.%	0.%	0.%	0.%	20.%
Someti.	0.%	0.%	0.%	0.%	0.%	0.%	0.%	13.%
Often	0.%	0.%	0.%	0.%	0.%	0.%	0.%	27.%

NOTE: Superscript NUMBERS indicate female groups that are not significantly different, SYMBOL superscripts indicate mixed sex groups that are not significantly different, (Newman-Keuls, $P \leq 0.05$).
Similarly means with the same SYMBOL superscript indicate mixed sex groups that are not significantly different (having no male counterparts, ANR and ANB were excluded).
† Distribution does not total to 100% due to rounding errors.
‡ Means are omitted as data is nominal.
▪ Cumulative percentage categories are not exhaustive. Columns will not total 100%.

TABLE 6 Continued: INTERVIEW SUBJECTS RESPONSES TO THE EDI ETC.

¢ Maximum Likelihood Chi Square contrasts of groups on three levels of Diet Rules indicated: first, the ANR and ANB groups contrasted with all other groups, produced a G^2 of 32.75 (2 df), and second, the female OB-R group contrasted with all others but ANR and ANB, produced a G^2 of 21.46 (2 df). Thus the ANR, ANB, and female OB-R groups were the major sources of variance and were significantly different from other groups regarding diet styles. Contrasting the 3 male groups produced the only other significant G^2 (13.4, 4df).

•Reported weight ranged from 4.5-9 Kg (10-20 lb.) lighter for 1 NORMAL, 3 OB-R, 2 CHO, 3 ANR and ANB outlier reported weight 26 Kg (57 lb.) lighter than measured weight, mean without her is 2.1.

TABLE 6 LEGEND

The EAT-26 (Garner, Olmsted, Bohr, & Garfinkel, 1982) is the abbreviated 26-item version of the original Eating Attitudes Test (EAT-40). FAC1 Subscale is equivalent to the Garner et al. Factor 1: Dieting. FAC2 is equivalent to the Garner et al. Factor 2: Bulimia and food preoccupation. FAC3 is equivalent to the Garner et al. Factor 3: Oral control. Scores on subscales within the latter were used to select 120 interview subjects.

NORMAL-Groups lower on all of the following selection criteria than OB-R, CHO, ANR, and ANB groups.

OBLI. R. are the groups meeting OB-R interview selection criteria, i.e. scores ≥10 on the "OB-R" subscale for obligatory-running, distinguished this group. OB-R criteria were based on Yates, Leehey, & Shisslak, 1983.

CHO CRAV. are the groups meeting CHO interview selection criteria, i.e. scores ≥ 10 on the "CHO" subscale for carbohydrate-craving, distinguished this group. CHO criteria were based on the research data of the Wurtmans (J. Wurtman, 1983; R. Wurtman, 1982).

ANR-LIKE are those meeting another interview selection criteria, i.e. an EAT-26 score ≥ 29 and a score on FAC2 less than 7 (responses like those with Anorexia, distinguished this group.

The ANB-LIKE group meets a similar interview selection criteria, i.e. an EAT-26 score ≥ 29 and a score on FAC2 ≤7 (responses of those with Anorexia Nervosa of the bulimic type (ANB), distinguished this group.

INT RATED AN-LIKE: Interviewer's rating of the subjects' restrictive eating patterns as being like those with anorexia nervosa. (The three more anorexic-like levels were: purging and restrictive dieting, severe fasting and other attitudes of restrictive anorexics, and diagnosis by the medical profession as either a restrictive or bulimic anorexic.

CRS: Carroll Rating Scale for depression (suggested cutoff is 10 but 14 is considered more appropriate in this study).

INT RATED DEP: Interviewer's rating of subjects' depression based on items modified from Hamilton Symptom Rating Scale (these are on Appendix F).

PSYCI PAST PT: Reported being a past patient of a psychiatrist or psychologist.

INT RT BINGER: Interviewer's rating of whether binges described by subject met DSM III criteria.

SLF RT BINGER: Subjects' rating of whether they were bingers.

BINGE URGES, EVER BINGE, FEAR NOT STOP BNG (BINGE), VOMIT AFTER BNG are items from Appendix E under the BINGEING title.

INT VOMIT WT LOSS: Intent to vomit for weight loss is items G.1 and G.3 in Appendix E.

DIET RULES: Subjects described (Appendix E) and were questioned on their dieting techniques. "Own rules" indicates use of fasting or purging methods. "Moderate" indicates subjects restricted intake but were not considered abnormally restrictive.

AVOID CHO, CONSUME CHO, and EAT BKFST PER WK (number of times per week breakfast is eaten) are items on Appendix E under the Dieting title.

Table 6 (continued)

STREN EX (Frequency of strenuous exercise, items N on EEQ), RUNNING 10K (kilometers, item O on EEQ), OTHER EX (exercise, item P on EEQ, yes/no), and OTHER EX FREQ (EEQ item Q: to obtain the frequency of other exercise. Answers were coded to respond to 7 possible frequencies.)

SPORTS HOURS/WK (per week) and SPORTS INTENSITY were the first items on Appendix E.

LIVING W SEX MATE: Items J.1 and J.2 from Appendix E.

MISSED MEN HISTORY and MISSED MEN FREQ: Items D.2 (with D.4) and D.5 (with D.7) on Appendix E.

MAX LOSS WT/MON: Item C.6 on Appendix E.

SCALE WT. PROP: Weight measured on a health scale at the interview was calculated as a percentage of the normal weight for the subject's measured height (Metropolitan Life Foundation Statistical Bullatin, 19 83). Figures are cumulative percent.

HIGHEST WT PROP, LOWEST WT PROP: Interview questions: "What is the lowest/highest you've weighed since reaching your present height?", which was calculated as a percentage of the subject's weight norm. Figures are cumulative percent.

IDEAL WT: Interview question: "What do you consider your ideal weight to be?" which was calculated as a percentage of the subject's weight norm.

TABLE 7

INDICES OF AGREEMENT FOR THE EAT-26

AND THE INTERVIEWER'S RATING OF BEING ANOREXIC-LIKE

Indice	This study: Fem. Stu.[1]		Garner & Garfinkel (1980):	
	Cutoff =20	Cutoff =29	Dance Stud.[2]	Stud. Models[2]
Sensitivity	90%	73%	92%	75%
False Negative Rate	10%	27%	8%	25%
Specicifity	61%	78%	66%	75%
False Positive Rate	39%	22%	34%	25%
Positive Preditive Value	.59	.63	.16	.19

[1] Using only the 75 female students interviewed.

[2] Williams, Hand, & Tarnopolsky (1982) calculated the indices of agreement for the Garner & Garfinkel (1980) study. These have been rounded to the nearest percentage.

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APPENDIX A

EXERCISE AND EATING QUESTIONNAIRE

The first part of this questionnaire requests some demographic information which will be kept STRICTLY CONFIDENTIAL but is required as part of this survey. These questions are very important in gathering information on a large sample of individuals. PLEASE TRY TO BE COMPLETELY HONEST IN YOUR ANSWERS. Thank you.

A.1 TODAY'S DATE:.....
A.2 NAME.....
Last First Name
A.3 LOCAL MAILING ADDRESS:.....
A.4 LOCAL TELEPHONE:.....
A.5 YEAR in college (as 1, 2, 3, etc.):.....MAJOR:.....
B. MALE [ ] FEMALE [ ] C. DATE OF BIRTH:...../...../.....
D. PRESENT AGE:.....years
E. What is your PRESENT WEIGHT?.....lbs
F. What is your HEIGHT?.....ft.....in.
G.1 What is the LOWEST YOU'VE WEIGHED since reaching your present height? .....lbs.
G.2 How long ago was that?.....(months)
G.3 For how many months were you at that weight?.....(months)
H.1 What is the MOST YOU'VE WEIGHED since reaching your present height? .....lbs. (excluding pregnancy)
H.2 How long ago was that?.....(months)
H.3 For how many months were you at that weight?.....(months)
I. In your opinion, you are now ...(check one)

very underweight [ ]
underweight [ ]
average [ ]
overweight [ ]
very overweight [ ]

J. What was the most you have weighed during the past year?.....lbs
K. What was the least you have weighed during the past year?.....lbs
L. Are you currently dieting? ..... no [ ]
yes [ ]

M. How often are you dieting...(check one)

never [ ]
rarely [ ]
part of each year [ ]
several days each month [ ]
several days each week [ ]
every day [ ]
every meal [ ]

N. Do you exercise strenuously...(check one)

never [ ]
less than once every four weeks [ ]
1 to 3 times very four weeks [ ]
once every week [ ]
2 to 6 times every week [ ]
once every day [ ]
more than once every day [ ]

O. Do you run 10 kilometers...(check one)

never [ ]
less than once every four weeks [ ]
1 to 3 times very four weeks [ ]
once every week [ ]
2 to 6 times every week [ ]
once every day [ ]
more than once every day [ ]

P. Other exercise?.....(please specify) Q. How often?.....

The next part of the scale measures a variety of attitudes, feelings and behaviors. Some of the items relate to food and eating. Others ask you about exercise and your feelings about yourself. THERE ARE NO RIGHT OR WRONG ANSWERS SO TRY VERY HARD TO BE COMPLETELY HONEST IN YOUR ANSWERS. RESULTS ARE COMPLETELY CONFIDENTIAL. Read each question and fill in the on the computer answer sheet appropriate circle according to the answer (never, rarely, sometimes, often, very often, or always) which applies

best for you. Please answer each question very carefully. Thank you.

RESPONSE CODE:

(N) = NEVER	(O) = OFTEN
(R) = RARELY	(V) = VERY OFTEN
(S) = SOMETIMES	(A) = ALWAYS

	1. Can clearly identify what emotion I am feeling.
	2. Skip breakfast and lunch.
FAC3(A)	3. Cut my food into small pieces.
CHO(N)	4. Favorite snacks are proteins: meat or cheese or eggs.
FAC3(A)	5. Display self control around food.
OBR(A)	6. Like running or exercising for its own sake.
FAC1(A)	7. Am preoccupied with the thought of having flab on my body.
	8. Am warm when others say they are chilly.
	9. Exercise primarily to burn off calories.
CHO(A)	10. When I am upset, I worry that I will start eating.
FAC1(N) + CHO(A)	11. Crave sweets (e.g. chocolate bars, desserts, sugar-loaded snacks).
CHO(A)	12. Could eat a huge quantity of a food I crave (e.g. a whole cake or pie).
	13. If I gain a pound, I worry that I will keep gaining.
	14. Crave fatty foods (e.g. bacon, butter-loaded snacks, French-fried foods).
OBR(A)	15. I hate being less than the best at things.
	16. A weight fluctuation of 5 pounds would affect the way I live.
FAC3(A)	17. Avoid eating when I am hungry.
FAC1(A)	18. Engage in dieting behavior.
	19. When I look in a mirror I feel bad about food I've recently eaten.
	20. Try to distribute eating over the entire day.
FAC2(A)	21. Find myself preoccupied with food.
OBR(A)	22. Only outstanding performance is good enough in my family.
FAC3(A)	23. Feel that others pressure me to eat.
CHO(A)	24. Find it easy to sleep late in the mornings.
CHO(A)	25. Feel low in energy or slowed down.
	26. Have loss of sexual interest or pleasure.
FAC1(A)	27. Am aware of the calorie content of foods that I eat.
CHO(N)	28. Eat sweets and carbohydrates without feeling nervous.
FAC1(A)	29. Feel extremely guilty after overeating.
FAC1(A) + CHO(N)	30. Particularly avoid food with high carbohydrate content (e.g. bread, potatoes, rice, etc.).

FAC1(A)	31. Eat diet foods.
FAC1(A)	32. Like my stomach being empty.
	33. Like to clean out my body with laxatives.
FAC1(A)	34. Think about burning up calories when I exercise.
FAC1(A)	35. Enjoy trying new rich foods.
FAC2(A)	36. Feel that food controls my life.
FAC2(A)	37. Give too much time and thought to food.
CHD(A)	38. Become anxious or irritable prior to eating.
FAC2(A)	39. Have the impulse to vomit after meals.
	40. Have trouble keeping warm.
	41. Take laxatives.
FAC2(N)	42. Take less time than others to eat my meals.
OBR(A)	43. Feel depressed if I can't exercise or run daily.
	44. I get confused about what emotion I am feeling.
	45. Try to avoid eating until as late in the day as possible.
FAC3(A)	46. Feel others would prefer that I ate more.
	47. Eat sensibly before others and make up for it when alone.
	48. Get confused as to whether or not I am hungry.
OBR(A)	49. Have continued to exercise after an injury (e.g. shin splints, tendinitis, bad back, etc.).
FAC1(A)	50. Am preoccupied with a desire to be slimmer.
CHD(A)	51. Particularly desire food with high carbohydrate content (e.g. bread, potatoes, rice, etc.).
FAC3(A)	52. Other people think that I am too thin.
OBR(N)	53. Can stop my exercise program without feeling anxious or depressed.
OBR(A)	54. Have neglected my vocational, personal, or social responsibilities because of my workouts.
FAC1(N) + CHD(A)	55. Feel calmed down after eating sweets.
	56. Look forward to times and places when I can eat alone.
	57. When I'm upset I don't know if I am sad, frightened or angry.
FAC2(A)	58. Have gone on eating binges where I feel that I may not be able to stop.
OBR(A)	59. Have taken pain killers (aspirin, 222's, etc.) to be able to run or take part in an event.
FAC1(A)	60. Am terrified of gaining weight.
FAC2(A)	61. Vomit after I have eaten.
*OBR(A)	62. Others have called my exercising an addiction.

OBR(A) 63. A good workout is as good as or better than an orgasm.

64. I eat or drink in secret.

Note: Items 1 to 64 have the subscale designation to the right of the item e.g. the EAT-26 FAC1 designates item is from Factor 1, Dieting, (Garner, Olmsted, Bohr, & Garfinkel, 1982) similarly FAC2 designates item from Factor 2, Bulimia and Food Preoccupation, and FAC3 designates item from their Factor 3, Oral Control. CHO designates an item purported to measure carbohydrate-craving and OBR designates item purported to measure obligatory running/obsessional exercise. The expected answer for those with eating disorders follows the subscale designation, e.g. (A) indicates the answer always was expected, (N) indicates the answer never was expected.

APPENDIX B

The EAT-26 Based on The EAT(40) Factor Structure

Factor I: Dieting

EEQ 7. (EAT,25) Am preoccupied with the thought of having flab on my body. [ORIGINAL HAS "FAT", NOT "FLAB".]

EEQ 11. (EAT,29) Original: Avoid foods with sugar in them. (REVERSED to: Crave sweets (e.g. chocolate bars, desserts, sugar-loaded snacks).

EEQ 18. (EAT,37) Engage in dieting behavior.

EEQ 27. (EAT,09) Aware of the calorie content of foods that I eat.

EEQ 29. (EAT,14) Feel extremely guilty after eating.

EEQ 30. (EAT,10) Particularly avoid foods with high carbohydrate content (e.g. bread, potatoes, rice, etc.). [EXTENDED. NOTE: 51. IS THE REVERSE]

EEQ 31. (EAT,30) Eat diet foods.

EEQ 32. (EAT,38) Like my stomach to be empty.

EEQ 34. (EAT,22) Think about burning up calories when I exercise.

EEQ 35. (EAT,39) Enjoy trying new rich foods.

EEQ 50. (EAT,15) Am preoccupied with a desire to be thinner. [REVISED "THINNER" to "SLIMMER".]

EEQ 55. (EAT,36) Original: Feel uncomfortable after eating sweets. (REVERSED to: Feel calmed down after eating sweets.)

EEQ 60. (EAT,04) Am terrified about being overweight.

[REVISED "BEING OVERWEIGHT", TO "GAINING WEIGHT".]

EAT-26 Factor II: Bulimia and food preoccupation

EEQ 21. (EAT,06) Find myself preoccupied with food.

EEQ 36. (EAT,31) Feel that food controls my life.

EEQ 37. (EAT,34) Give too much time and thought to food.

EEQ 39. (EAT,40) Have the impulse to vomit after meals.

EEQ 58. (EAT,07) Have gone on eating binges where I feel that I may not be able to stop.

EEQ 61. (EAT,13) Vomit after I have eaten.

EAT-26 Factor III: Oral control

EEQ 3. (EAT,08) Cut my food into small pieces.

EEQ 5. (EAT,32) Display self-control around food.

EEQ 17. (EAT,05) Avoid eating when I am hungry.

EEQ 23. (EAT,33) Feel that others pressure me to eat.

EEQ 42. (EAT,26) Original: Take longer than others to eat meals. (REVERSED to: Take less time than others to eat meals. EEQ 46. (EAT,12) Feel that others would prefer if I ate more.

EEQ 52. (EAT,24) Other people think that I am too thin.

EAT-26 from Garner, Olmsted, Bohr, & Garfinkel, 1982, p. 874.

Appendix C

EATING DISORDER INVENTORY

Date:..... Age:.....Sex:.....
Present weight:..... Height:.....
Highest past weight:.....(lbs) (excluding pregnancy)
How long ago?.....(months)
How long did you weight this?.....(months)
Lowest past adult weight:.....(lbs)
How long ago?.....(months)
How long did you weight this?.....(months)
What do you consider your ideal weight to be?.....(lbs)
Age at which weight problem began (if any).....
Father's occupation:.....

Instructions:

This is a scale which measures a variety of attitudes, feelings and behaviors. Some of the items relate to food and eating. Others ask you about your feelings about yourself. THERE ARE NO RIGHT OR WRONG ANSWERS SO TRY VERY HARD TO BE COMPLETELY HONEST IN YOUR ANSWERS. RESULTS ARE COMPLETELY CONFIDENTIAL. Read each question and fill in the appropriate circle on the computer answer sheet according to the answer (never, rarely, sometimes, often, very often, or always) which applies best for you.
Please answer each question VERY carefully. Thank you.

RESPONSE CODE:	N=NEVER	O=OFTEN
	R=RARELY	V=VERY OFTEN
	S=SOMETIMES	A=ALWAYS

1. I eat sweets and carbohydrates without feeling nervous.
2. I think that my stomach is too big.
3. I wish that I could return to the security of childhood.
4. I eat when I am upset.
5. I stuff myself with food.
6. I wish that I could be younger.
7. I think about dieting.
8. I get frightened when my feelings are too strong.
9. I think that my thighs are too large.
10. I feel ineffective as a person.
11. I feel extremely guilty after overeating.
12. I think that my stomach is just the right size.
13. Only outstanding performance is good enough in my family.
14. The happiest time in life is when you are a child.
15. I am open about my feelings.
16. I am terrified of gaining weight.
17. I trust others.
18. I feel alone in the world.
19. I feel satisfied with the shape of my body.
20. I feel generally in control of things in my life.

21. I get confused about what emotion I am feeling.

22. I would rather be an adult than a child.

23. I can communicate with others easily.

24. I wish I were someone else.

25. I exaggerate or magnify the importance of weight.

26. I can clearly identify what emotion I am feeling.

27. I feel inadequate.

28. I have gone on eating binges where I have felt that I could not stop.

29. As a child, I tried very hard to avoid disappointing my parents and teachers.

30. I have close relationships.

31. I like the shape of my buttocks.

32. I am preoccupied with the desire to be thinner.

33. I don't know what's going on inside me.

34. I have trouble expressing my emotions to others.

35. The demands of adulthood are too great.

36. I hate being less than best at things.

37. I feel secure about myself.

38. I think about bingeing (overeating).

39. I feel happy that I am not a child anymore.

40. I get confused as to whether or not I am hungry.

41. I have a low opinion of myself.

42. I feel that I can achieve my standards.

43. My parents have expected excellence of me.

44. I worry that my feelings will get out of control.

45. I think my hips are too big.

46. I eat moderately in front of others and stuff myself when they're gone.

47. I feel bloated after eating a small meal.

48. I feel that people are happiest when they are children.

49. If I gain a pound, I worry that I will keep gaining.

50. I feel that I am a worthwhile person.

51. When I am upset, I don't know if I am sad, frightened or angry.

52. I feel that I must do things perfectly or not do them at all.

53. I have the thought of trying to vomit in order to lose weight.

54. I need to keep people at a certain distance (feel uncomfortable if someone tries to get too close).

55. I think that my thighs are just the right size.
56. I feel empty inside (emotionally).
57. I can talk about personal thoughts or feelings.
58. The best years of your life are when you become an adult.
59. I think my buttocks are too large.
60. I have feelings I can't quite identify.
61. I eat or drink in secrecy.
62. I think that my hips are just the right size.
63. I have extremely high goals.
64. When I am upset, I worry that I will start eating.

Appendix D

CARROLL RATING SCALE

Complete ALL the following statements by CIRCLING YES or NO, based on how you have felt during the PAST FEW DAYS.

Yes No 1. I feel just as energetic as always.

Yes No 2. I am losing weight.

Yes No 3. I have dropped many of my interests and activities.

Yes No 4. I have completely lost interest in sex.

Yes No 5. I am especially concerned about how my body is functioning.

Yes No 6. It must be obvious that I am disturbed and agitated.

Yes No 7. I am still able to carry on doing the work I am supposed to do.

Yes No 8. I can concentrate easily when reading.

Yes No 9. Getting to sleep takes me more than half an hour.

Yes No 10. I am restless and fidgety.

Yes No 11. I wake up much earlier than I need to in the morning.

Yes No 12. Dying is the best solution for me.

Yes No 13. I have a lot of trouble with dizzy and faint feelings.

Yes No 14. I am being punished for something bad in my past.

Yes No 15. My sexual interest is the same as always.

Yes No 16. I am miserable or often feel like crying.

Yes No 17. I often wish I were dead.

Yes No 18. I am having trouble with indigestion.

Yes No 19. I wake up often in the middle of the night.

Yes No 20. I feel worthless and ashamed about myself.

Yes No 21. I am so slowed down that I need help with dressing and getting things done.

Yes No 22. I take longer than usual to fall asleep at night.

Yes No 23. Much of the time I am very afraid but don't know the reason.

Yes No 24. Things which I regret about my life are bothering me.

Yes No 25. I get pleasure and satisfaction from what I do.

Yes No 26. All I need is a good rest to be perfectly O.K.

Yes No 27. My sleep is restless and disturbed.

Yes No 28. My mind is as fast and alert as always.

Yes No 29. I feel that life is still worth living.

Yes No 30. My voice is dull and lifeless.

Yes No 31. I feel irritable or jittery.

Yes No 32. I feel in good spirits.

Yes No 33. My heart sometimes beats faster than usual.

Yes No 34. I think my case is hopeless.

Yes No 35. I wake up before my usual time in the morning.

Yes No 36. I still enjoy my meals as much as usual.

Yes No 37. I have to keep pacing around most of the time.

Yes No 38. I am terrified and near panic.

Yes No 39. My body is bad and rotten inside.

Yes No 40. Any current troubles are because of the bad weather we have been having.

Yes No 41. My hands shake so much that people can easily notice .

Yes No 42. I still like to go out and meet people.

Yes No 43. I think I appear calm on the outside.

Yes No 44. I think I am as good a person as anybody else.

Yes No 45. My trouble is the result of some serious internal disease.

Yes No 46. I have been thinking about trying to kill myself.

Yes No 47. I get hardly anything done lately.

Yes No 48. There is only misery in the future for me.

Yes No 49. I worry a lot about my bodily symptoms.

Yes No 50. I have to force myself to eat even a little.

Yes No 51. I am exhaused much of the time.

Yes No 52. I can tell that I have lost a lot of weight.

Appendix E

THE INTERVIEW QUESTIONS

TODAY'S DATE:..... SEX: male [ ] female [ ]

ACTIVITIES:
How many hours per week do you spend on the following acitivities:
A.0 Physical sports (jogging, competitive sports, hiking, etc.)
.....hours/week
A.1 What sports/ strenuous activities? .....
A.2 Studying and pursuit of hobbies not involving physical exertions
cards, sewing, reading, video games, etc.) .....hours/week
A.3 Television watching .....hours/week

HABITS:
B.1 Do you smoke? no[ ] yes [ ]
B.2 If yes, packs per day .....
B.3 Do you drink alcohol? no[ ] yes [ ]
B.4 If yes, how much .....oz./week of wine
B.5 .....bottles beer/week
B.6 .....oz. hard liquor/week
B.7 Do you do anything to excess? no[ ] yes [ ]
B.8 If yes what? .....

DIETING:
C.1 How many times per week do you eat breakfast?.....
C.2 How many times per week do you eat lunch?.....
C.3 Are you currently dieting? no[ ] yes [ ]
C.4 If yes, length of current diet.....(weeks)
C.5 Name of current diet?.....
C.6 What is the maximum amount of weight that you have ever lost within 1 month?.....(lbs.)
C.7 What is the maximum amount of weight that you have ever gained within 1 month?.....(lbs.)
C.8 In a typical week, how much does your weight fluctuate (maximum-minimum)?.....(lbs.)

Taste preferences: (Check the space corresponding to opinion of following food types):

	Dislike	Like Moderately	Like Much
C.9 Salty foods	.....	.....	.....
C.10 Sweet foods & desserts	.....	.....	.....
C.11 Spicy foods	.....	.....	.....

C.12 List snack foods eaten.....
.....
C.13 List meats eaten.....
C.14 List vegetables eaten.....
C.15 Do you trim fat from your meat? no[ ] yes[ ]

AMENORRHEA: (questions for females only)
D.1 Are your menstrual periods regular? no[ ] yes[ ]
D.2 Have you had irregular menstrual periods? no[ ] yes[ ]
D.3 If yes, when.....
D.4 If yes, associated with?.....
D.5 Have you missed menstrual periods? no[ ] yes[ ]
D.6 If yes, associated with?.....
D.7 If yes why?.....
D.8 How many?.....
D.9 How often?.....
D.10 Do you use oral contraceptives? no[ ] yes[ ]
D.11 Have you just begun using oral contraceptives? no[ ] yes[ ]
D.12 Do you use oral contraceptives regularly? no[ ] yes[ ]
D.13 Do you typically gain weight before your menstrual period? no[ ] yes[ ]
D.14 If yes, how much.....(lbs.)
D.15 Do you retain fluid before your menstrual period? no[ ] yes[ ]
D.16 If yes, how much.....(lbs.)

BINGEING:
E.1 Do you get uncontrollable urges to eat and eat until you feel physically ill? no[ ] yes[ ]
E.2 Are there times when you are afraid that you cannot voluntarily stop eating? no[ ] yes[ ]
E.3 Do you make yourself vomit after eating too much? no[ ] yes[ ]
E.4 Do you feel miserable and annoyed with yourself after an eating binge? no[ ] yes[ ]
E.5 Have you ever had an episode of eating an enormous amount of food in a short space of time (an eating binge)? no[ ] yes[ ]
E.6 Do you consider yourself a binge-eater? no[ ] yes[ ]
E.7 If yes, what is the average number of days between your episodes binge-eating?.....
E.8 If yes, what is your description of one of your typical eating binges?.....

.....

In order to control your weight, do you use..... (check one)

F.1 diet pills?
never [ ]
less than once every four weeks [ ]
1 to 3 times very four weeks [ ]
once every week [ ]
2 to 6 times every week [ ]
once every day [ ]
more than once every day [ ]

F.2 laxatives
never [ ]
less than once every four weeks [ ]
1 to 3 times very four weeks [ ]
once every week [ ]
2 to 6 times every week [ ]
once every day [ ]
more than once every day [ ]

F.3 diuretics or water pills?
never [ ]
less than once every four weeks [ ]
1 to 3 times very four weeks [ ]
once every week [ ]
2 to 6 times every week [ ]
once every day [ ]
more than once every day [ ]

F.4: Do you use these for other reasons than to alter appetite?.....
what reason?.....
F.8 Other drugs? (please list street drugs you use e.g. MJ could be listed as appetite increaser, Amphetamine as appetite decreaser, if you wish).

.....
F.5 How often ? (use the answers NEVER to MORE THAN ONCE A DAY)
.....

G.1 Have you ever vomited after eating? no [ ] yes [ ]

G.2 How frequently do you vomit after eating? (check one)
never [ ]
less than once every four weeks [ ]
1 to 3 times very four weeks [ ]
once every week [ ]
2 to 6 times every week [ ]
once every day [ ]
more than once every day [ ]

H.1 When was your last dental checkup?.....
H.2 Any problems?.....
H.3 Number of cavities?.....

H.4 Any swollen glands under the jaw bone (that is salivary glands)?
no[ ] yes[ ]

I.1 Are you currently a patient of a psychologist or psychiatrist?..
no[ ] yes[ ]

I.2 Have you been such a patient in the past?.....
no[ ] yes[ ]

J.1 Are you married or living with a sexual partner? .....
no[ ] yes[ ]

J.2 Do you engage in sexua activity

never [ ]
less than once every four weeks [ ]
1 to 3 times very four weeks [ ]
once every week [ ]
2 to 6 times every week [ ]
once every day [ ]
more than once every day [ ]

If you have consulted your physican regarding your mental health,
please give the particulars here or give them verbally now.....

.....

Appendix F

THE INTERVIEW FORMAT

"Hi. How are you. I'm glad you could come in. I wanted to talk individually to some of the students who answered my first questionnaire. As you know, I am studying eating and exercise. In this interview I want to take some measures and ask some quesions that can't be done easily in large groups.

[Assure participant that information will be kept confidential. Obtain any demographic data not answered on the EEQ.] First, we'll get the measurements done, then I'd like to check your understanding of some of the questions on that first questionnaire by having you fill out by having you fill out three more questionnaires.
[NOTE: return weight and height indicators to non-interesting measures.]

MEASURE: sublingual temp. .....C body weight .....kilos

height .....cm pulse .....

RATING: [For each item circle the number next to the statement that best describes the interviewee.]

Depressed Mood: (Sadness, hopeless, helpless, worthless)
0. Absent
1. These feelings states indicated on questioning
2. These feeling states spontaneously reported verbally
3. Communicates feeling states non-verbally - - i.e., through facial expression, posture, voice, and tendency to weep
4. Reports VIRTUALLY ONLY these feeling states in spontaneous and non-verbal communication.

Agitation:
0. None
1. "Playing with" hand, hair, etc.
2. Hand-wringing, nail-biting, hair-pulling, biting of lips.

Anxiety-psychic:
0. No difficulty
1. Subjective tension and irritability (made evident)
2. Worrying about minor matters
3. Apprehensive attitude apparent in face or speech
4. Fears expressed without questioning

Anxiety-somatic: (physiological concomitants of anxiety such as:
0. Absent — gastro-intestinal - dry mouth, wind, indigestion
1. Mild — cardio-vascular - headaches
2. Moderate — respiratory - hyperventilation, sighing
3. Severe — urinary frequency
4. Incapacitating — sweating

Rating of behaviors as being analogous to restrictive anorexia:
1. No problem.
2. Very restrictive eating pattern.
3. Purging plus a restrictive eating pattern.
4. Fasting plus a restrictive eating pattern.
5. Medically diagnosed as anorexic (bulemic or restrictive).

Regarding the Interview Self-Report:
Check whether vomiting is self-induced.
Review E.8 and ascertain whether bingeing meets DSM III criteria for bulimia.

[NOTE: ASK OF ANY NONCAUCASIAN THE FOLLOWING.]
Were you raised in Canada?.....Where were you raised?.....
When did you come to this country?.....

[ASK FOR THE NAME, ADDRESS, AND PHONE NUMBER OF A SIGNIFICANT OTHER, i.e. a person through whom the researcher would be able to contact the interviewee at any time.] .....

Appendix G

Group Testing Script

In group testing participants will be told as the questionnaires are passed out that: [Write these steps on a blackboard. Read from it.]

1. Please do not start until you are asked to begin.

2. It serves the purpose of this research best if you supply all the information requested.

3. Use only pencil on the computer sheet.

4. Enter your full name and student ID on both the computor answer sheet and the questionnaire. (Add verbally: "There is no place for your ID on the questionnaire, so please write it now in the white space at the top right hand corner of the first page.")

5. Answers to the first page of questions go directly on the questionnaire. (Add verbally: "Phone number and address are requested so that I can reach you to see if you'd be interested in participating in subsequent research we will be conducting. You are asked to provide some vital statistics, that is, your height, weight, and age. These are the type of answers that are to be written on the questionnaire's first page.")

6. Responses to the statements numbered 1 - 64 go on the computer answer sheet - - see the response code. (Add

verbally: "Those of you who are familiar with computer answer sheets please bear with me now as I explain to first year students how they are filled in..." - - using poster, now explain the name field and the information requested there, as well as the answer field and the use of circles 0 - 5 of the 10 provided.)

NOTE: Copies of the debriefing will be placed with the reading on reserve at Cameron Library.*

7. When finished bring *all* material forward and do three things: enter your name and ID on the sheets provided so that you will receive credit for participation, get your participation card signed by the researcher, and get a specially coded computer sheet to verify your participation with the computer. (Verbally explain where the computer sheet goes and add:) "This multiple entry of names and checking and double checking are required for you to obtain credit."

"ANY questions? Then please, read carefully. As you begin the second and third page of the questionnaire, read each statement carefully. When you have decided which is the BEST of the alternatives, blacken the corresponding space on the answer sheet. Be sure you only mark one answer in each row. If you change your mind, erase your first mark COMPLETELY. DO NOT MAKE STRAY MARKS, OR BEND OR MUTILATE THE ANSWER SHEET IN ANY WAY."

"Lastly, I would emphasize, *accurate information is very important for this research. Please answer accurately.*"

"Thank you for your participation."

*[It is unlikely that the group can be held, while the stragglers finish, so the debriefing can be given verbally.]

Appendix H

Debriefing for Group Testing

In this study you have experienced two important research methods in contemporary psychology. I refer to the SURVEY METHOD and the TEST METHOD.

Considering first the survey method: Some problems that psychologists want to study are difficult to approach through direct observation. They may be studied through the use of questionnaires or interviews. An example is the Masters and Johnson research on sexual response. You may know that most of the information on how people in our society behave sexually came from the extensive surveys of Alfred Kinsey and his associates nearly 30 years ago. Information from thousands of individual interviews was analyzed and published by Kinsey and his associates as *Sexual Behavior in the Human Male* and *Sexual Behavior in the Human Female*. Surveys have also been used to obtain information on consumer choices, political opinion, and many other topics. The Canadian Census and the Gallup poll are probably the most familiar surveys. An adequate survey requires: *1) a carefully pretested questionnaire, 2) interviewers trained in its use, 3) a sample selected as representative of the population to be studied, and 4) appropriate methods of data analysis and reporting so that the results are properly interpreted.*

Only the first part of the questionnaire you just completed is a survey. The part where you wrote in your answers is the survey. The part that you answered on a computer sheet is a *test*. Tests are used to measure all kinds of abilities, interests, attitudes and skills. Tests enable the psychologist to obtain large quantities of data from people with minimum disturbance to their lives and without elaborate laboratory equipment. A test essentially presents a uniform situation to a group of people who vary in aspects relevant to the situation (such as intelligence, anxiety, manual skills, and perceptual skills). An analysis of answers relates *variations in test scores* to *variations among people*.

There are a few things worth noting about the type of test you had: 1) It is a *self-report test*, rather than being the type where the researcher rates you and fills in a form. 2) It is an *attitude test*. That is, to the degree that participants indicate agreement with statements that are favorable to an issue, or indicate disagreement with statements unfavorable to it, they are assumed to hold a positive attitude. Negative attitudes are assumed from agreement with unfavorable statements or disagreement with favorable statements. So if you engage in dieting behavior "very often" you are assumed to have a more positive attitude toward dieting than if you answered "never". 3) It has a *Likert scale* with 6 choices. In Likert scaling, individuals responding to an attitude questionnaire are

simply asked to indicate the extent to which they agree or disagree with various statements. The type of answer choices in a Likert scale may vary. Originally a researcher named Likert used 5 possible responses: Strongly Agree, Agree, Uncertain, Disagree, Strongly Disagree, - - but respondents have been asked to place a check mark along a line labeled "Strongly Agree" at one end and "Strongly Disagree" at the other - - and they have been asked to circle a number between -10 and +10 to indicate their extent of agreement or disagreement with various attitude statements.

(This material is based on information in:
Baron, R. A., & Byrne, D. (1981). *Social Psychology: Understanding human interaction*. (pp. 98-99). Boston: Allyn & Bacon. (Third edition). Hilgard, E. R., Atkinson, R. C., & Atkinson, R. L. (1975). *Introduction to Psychology*. (pp. 18-19). New York: Harcourt Brace Jovanovich. (Sixth edition).

Appendix I

Telephone Script

"Hi... My name is Doris Milke. I'm a researcher at the University. You participated in a study of mine called *GARF*. I don't know if you remember, but I said the reason that I asked for names and phone numbers was to be able to call people and see if they would like to participate in further research. And that's why I'm calling you now - - to see if you would like to do another study." [Acknowledge any response.]

"I'd like to see you for an hour, on an individual basis, and I can offer you one credit for your time." [If response is that all 3 credits have been earned indicate that: "If you are interested, I'd like to see you anyway - - I can always add a fourth project to your card and give you one more reading from which you can choose to do your exam questions In order to get the research done in the time we'd planned, it does help if I see the people I'd like to see." or respond as necessary.]

"We can arrange a time that is convenient for you ..." "I'd like you to come to my office, P453 in the Psychology Wing of the Biological Sciences Building. My name is outside the door - - Milke [spell M-I-L-K-E]. I'll give you my office number and my home phone number in case you have any trouble making the appointment. My office number is 432-5274

and my home number is 459-....."

[Confirm appointment.] "Now, I have you down for ... A.M./P.M. on ... That's a [day of week]. Good. Thank you."

[If person asks if researcher is calling everyone or about criteria....] "No, I'm not calling everyone. I ended up testing 612 people so I can't possibly see them all individually. I want to get a lot of variation in the people I see so I'm selecting some who exercise alot, some who eat alot, some who diet alot, and that sort of thing. As far as possible I'm making a random selection within those groups. We can talk more about that when you come in."

APPENDIX J

Debriefing for Interview

"Do you have any questions?" [Respond to any questions.]

"Please don't assume that I can in any way diagnosis any eating problems or other psychological problems. The "state of the art" in the area in which I am interested, eating disorders, is just not good enough to make such diagnoses possible, especially from the type of questionnaires you've seen. Right now there is great disagreement about what diagnostic criteria should be used. That is one of the reasons there is value to this research. It is hoped that better criteria can be developed by studying people who diet and therefore have some of the behaviors of people with eating disorders."

"Were you concerned about being selected for an interview?" [Respond to allay concerns.]

"Everyone has different reactions to such questions as you have answered, do you have any comments? I would find it helpful to hear your feelings and reactions." [Take notes of comments.]

"Did you find anything odd or disturbing?" [Take note.]

[Confirm correct suspicions and facilitate face-saving strategies of the participant.]

[The following can be given to each participant to read.]

Very little information exists on the epidemiology or incidence of eating and food-related behaviors and attitudes that may be precursors of more serious eating disorders such as anorexia nervosa (self-starvation), bulimia (binge-eating), and obesity. Each of these disorders is currently a serious public health problem. Each is manifested by a conspicuous disturbance in eating behavior. Anorexia nervosa and buiimia are exhibited almost exclusively by females, and usually begin in adolescence. Anorexia nervosa is characterized by 1) Self-inflicted severe loss of weight, using one or more of the following devices: a) avoidance of foods considered to be "fattening" (especially carbohydrate-containing foods); b) self-induced vomiting; c) abuse of purgatives; and d) excessive exercise. The diagnostic criteria for bulimia describe its behavioral components as: A. Recurrent episodes of binge-eating (rapid consumption of a large amount of food in a discrete period of time, usually less than 2 hours); B. At least three of the following: (1) consumption of high calorie, easily ingested food during a binge, (2) inconspicuous eating during a binge, (3) termination of such eating episodes by abdominal pain, sleep, social interruption, or self-induced vomiting, (4) repeated attempts to lose weight by severely restrictive diets, self-induced vomiting, or use of cathartics and/or diuretics, (5) frequent weight fluctuations greater than 10 pounds due to alternating binges and fasts. Obesity affects both sexes; in childhood

and after age 50, females in Western cultures have higher obesity rates than males.

A major goal of this research is to provide an epidemiological background against which clinical cases of disordered eating behavior can be assessed. Interviews are conducted with a small sample of students as a means of verifying the answers given in mass testing as well as to obtain more information and some objective measurements (e.g. body weight, pulse, temperature, etc.).

The *research problem* was one of description: to describe a large sample of students in terms of such characteristics as weight-for-height-and-age; perceived ideal weight; preoccuption with weight and thinness; incorporation of physical exercise, limitation of calories, self-induced vomiting or laxatives as routine aspects of eating and food-related behavior.

This study is not an *experiment*: I cannot vary the presence or strength of the factors in which I am interested. You already have certain factors or you don't. I can only gather data and see whether some factors seem to be related. For example I will look to see whether high rates of exercise have a significant correlation with answers that show low rates of eating. Other researchers suggest exercise may be able to produce anorexia, that is, loss of appetite. That is why I am looking at that relationship. And I will see if body weight is correlated with certain sets of answers because the questionnaire you answered in class has

within it another questionnaire on eating behaviors. The embedded questionnaire has been used by approximately 10 other researchers with satisfactory results so it is more trusted that the questions I've composed. I want to see how my questions rate against that questionnaire. Besides the questions on exercise, some of the questions I've written are on carbohydrate-craving. I want to see if those who overeat occasionally crave particular types of food such as carbohydrates, -- breads, pastas, sweets. Those are the main things I am interested in.

[Spoken]

"As a piece of research, was the study clear to you?" [Encourage any responses that approach the explicit nature of the study.]

"Was its purpose clear and was it clear how this purpose was carried out?" [Make any corrections necessary to responses.]

"I must be sure that I can follow the same procedure in these interviews. That makes it very important that word doesn't get around about what the interview involves. People who know the full purposes of a research study often answer questions very differently than they would if they were thinking about how each answer could be taken. I hope I can trust you not to reveal the sort of information we have just discussed. [Obtaining a verbal committment here could be responded to by "good" and the experimenter making a

tickmark on the data sheet for weight etc. so it registers in the participant's mind that a committment has been made not to reveal information.]

"If you are convinced this research is important you will realize, as well, that reporting untrustworthy data has serious implications. This can happen because a participant knows what's going on in advance. You can help me now by reporting whether you heard even a little about the purpose of this interview before coming here today -- I don't want to know from whom."

"You have given some very personal information to me. Be assured that your name will not appear on any of the tests, including both the questionnaire used in your classroom as well as those used here today. If you have any concerns about what you have told me and you would like to withdraw your data you may do so now. If you change your mind in the next few days and you want to withdraw your data from my study, please contact me. For a very brief time, while this is put in the computer and recoded, your data exists as an individual record I can withdraw, so it can removed during this time. My phone number is 432-5274." [Where appropriate say:]

"If you have any concerns about your form of dieting I want you to know that I have talked to the University Health Service (show a map with Health Services Building marked) and you would be welcome to go see any one of their doctors. They give counselling for weight reduction and they have

specialists they can send people to if they think a specialist could give some help. The phone number is 432-2612."

"Do you have any questions?"

"Thank you. I think you have made an important contribution to my research."

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